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TELEPHONY

THE JOURNAL OF THE TELEPHONE INDUSTRY

FALL RURAL ISSUE

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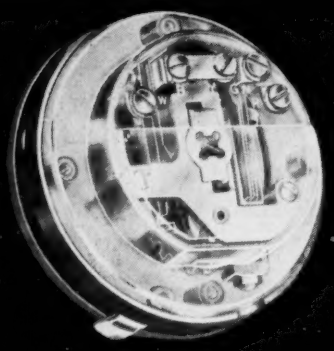

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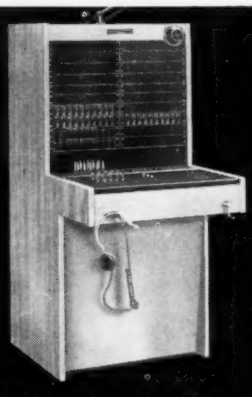

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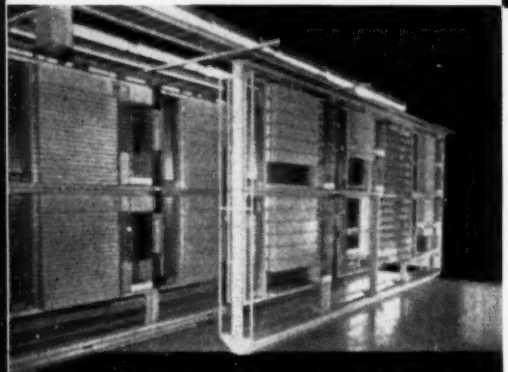

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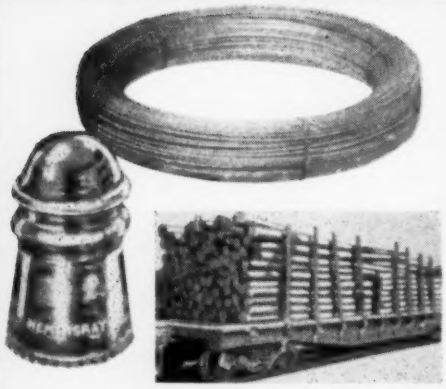

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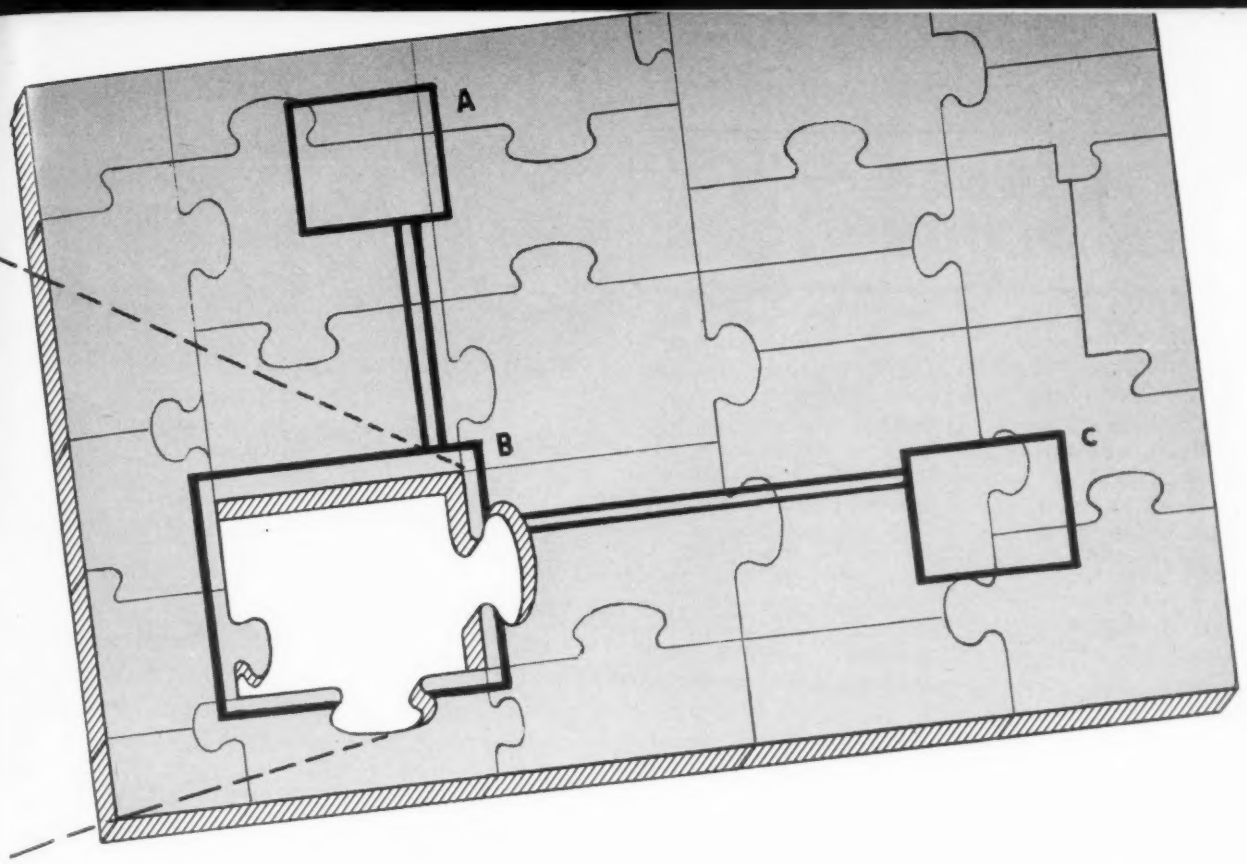

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—KELLOGG REPEATER

A Kellogg Repeater fits in nicely as the ideal, low-cost solution to many a circuit "puzzle," when transmission level is "below commercial."

In the above illustration, for example, the operating company had 40 miles of #12 BB iron wire between exchanges "A" and "B", and 25 miles of #12 BB iron wire between "B" and "C". Changing traffic conditions called for a direct through circuit from "A" to "C". The existing wire facilities did not provide acceptable transmission, since the loss was 20 db, and commercial standards call for a 6 db circuit.

One suggested solution was the replacement of the iron wire with .104 copper wire. This would have provided a 4.5 db circuit, but present-day wire and construction costs would have ranged from $12,000 to $18,000.

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FLASHES AND PLUGS

NEW HIGH IN SERVICE. House telephone service in Sutton Terrace in New York City will include elevator telephones for the convenience of tenants who wish to order taxicabs or make other calls while riding, according to the owner of the building. The elevator telephones will be on open circuits and sounds above normal noise level in the elevators can be heard in the main superintendent's office and by the switchboard attendant on duty, as a safety measure.

• • •

FRATERNIZING WITH THE ENEMY. Leaders of united drys, fighting for statewide prohibition in Arkansas, wanted to broadcast activities of a rally at the state capitol building in Little Rock recently.

A telephone outlet was needed to hook up the radio microphone.

Naturally they wanted the handiest outlet. They used it in the offices of the alcoholic beverages division of the Arkansas revenue department.

• • •

NO EMPTY WORDS. A 74-year-old Oklahoma City, Okla., man told police that a mysterious telephone caller threatened to rob him just before he went to bed. When he got up in the morning to get firewood, he found two gunmen waiting by his back door. They took his billfold and $70.

• • •

HELPFULLY SUGGESTIVE. Listed in the classified section of the St. Louis, Mo., telephone directory are George Shivers Ice & Coal Co., Home Sweet Home Tavern, Moonshine Electric Co., Love Me Lunch Room, Asylum Club and Just Us Corset Club.

• • •

THAT INTUITION AGAIN. "Is this number 2467?" queried a woman caller.

"Yes, it is," was the reply.

"Well I'm trying to reach my husband at 2466 and the line is busy. Will you please tell him to call me? Your number is so close to his, I figured you would be right next door."

• • •

BALL OF FIRE ON TV. In South Bend, Ind., Ernest Kolesiak set out to repair his television aerial. He was adjusting a guy wire on top of his house when he lost control of the aerial. It dropped across a 27,000-volt electric line and the next minutes were terrific. Balls of fire bounced over the roof, making "noises like cannons." The telephone burned out. Mrs. Kolesiak, sitting in the kitchen, was temporarily blinded. The pipes under the kitchen sink melted. Kolesiak clambered down, humbly called a television repairman.

• • •

HOW TO JAM A SWITCHBOARD. An auctioneer ran this classified ad in a Grand Rapids, Mich., newspaper under a farm auction heading: "Auctioneering's my business. If not at home when you call, make a date with my wife, telephone 5-8563."

• • •

ALL IN A NIGHT'S WORK. A Kansas City, Mo., police radio dispatcher answered a telephone call at the station one night not long ago. It was his wife, calling to report the theft of their automobile.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

December 2, 1950

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH
WASHINGTON EDITOR

State regulatory commissions talk out against federal government encroachment on their jurisdiction at NARUC convention in Phoenix. . . . Adopts committee's report opposing application of excess profits tax to regulated public utilities. . . . REA telephone loan program criticized. (While Mr. Welch is on a vacation TELEPHONY's Washington reports will be made by Don Burke, associate editor of *Public Utilities Fortnightly.*)

DIFFERENCES between federal and state regulatory commissions broke out all over the recent convention of the National Association of Railroad & Utilities Commissioners at Phoenix, Ariz. Retiring President Harry M. Miller of Ohio led off with criticism of the Federal Power Commission (FPC) for its intrusion into the field of gas regulation. NARUC General Solicitor Walter R. McDonald of Georgia took the same line and Chairman Benjamin F. Feinberg of the New York Public Service Commission really poured it on, in a scholarly dissertation on the legal steps taken by the FPC toward dominating local utility regulation.

But it was in the field of telephone regulation that differences between the state and federal commissions actually broke out into the text of an NARUC committee report. Somewhat ironically the long but harmonious sounding name of this group is "The Special Committee Cooperating With the FCC in Studies of Telephone Regulatory Problems." About the only point of agreement on which this committee seemed able to cooperate after the exchange of letters between its chairman, Matt L. McWhorter, of the Georgia commission, and Commissioner Paul M. Walker of the FCC was to go on studying the problems some more.

The whole difficulty in a nutshell is the growing disparity between the rates for intrastate toll calls (under the state commissions) and interstate long distance rates (subject to the FCC). The intrastate rates have been rising somewhat with local exchange rates while interstate long distance rates have not increased for nearly a couple of decades. Until World War II, they were coming down pretty regularly. All this, of course, puts the heat on state commissioners who have to explain to local citizens why it sometimes costs more to call a shorter distance within the same state, than to make an interstate long distance call.

So, the state members of the Special Committee proposed that the 1947 "Separations Manual" (used to segregate interstate telephone plant, expenses, and revenue, from intrastate) be revised. They proposed a straight mileage plus conversation-minutes basis. If this were done, they estimated that some $200,000,000 of telephone industry plant might be shifted from intrastate to interstate investment classification. And this in turn would tend to bring the interstate long distance rates more into line with intrastate rates. The committee report explains this as follows:

"For the reasons outlined in the staff committee report, the state representatives favor the proposal and the FCC members do not favor it. It is the considered judgment and opinion of your committee that the proposal is eminently fair and equitable and your committee strongly urges that it be given a fair trial. Furthermore, instead of measuring the proposal from the standpoint of past precepts, we believe that the problem should be approached with an open mind in a wholehearted effort to determine the best and most equitable separation method considering toll service in the light of present-day conditions.

"FCC representatives of the staff committee have raised certain objections to the proposal, including the varying effect on state toll costs in the different states, but have indicated a willingness to consider further information relative to the proposal. With respect to the contention as to the varying effect on state toll costs in the different states, we feel certain this possible objection could be overcome, provided the general principle under consideration is accepted.

"We believe that objections to the proposal under discussion result to some extent from the fact that a portion of the integrated toll network is owned by the Long Lines Department of the AT&T company which serves to complicate the problem. Actually if all the toll facilities of the Bell System were owned by the several associated companies the proposal under consideration would be much simpler in application. Under such circumstances all Bell System toll lines plant within each state would be owned by a single company (with minor exceptions where more than one associated company operates in a single state) and such plant would be apportioned between state and interstate services on over-all actual usage within that state. In view of this situation we feel that the existence of the Long Lines Department should not permit corporate fiction to influence our views as to the reasonableness of this proposal.

"Complete cooperation between state and federal authorities in the telephone field is particularly essential and in the public interest in view of the separate jurisdictions relating to a single type of service rendered largely by a single system over a jointly used integrated toll network. The objective of any separation procedure should be a fair and equitable allocation of property and expenses to the respective jurisdictions with all of the property and expenses included within both jurisdictions."

Commissioner Walker, on behalf of the FCC, disagreed with the committee's proposal in a letter dated Oct. 18. He said in substance that the way the division of total telephone investment is now figured is a fair and proper procedure. "Let us not," stated Walker, "make the mistake of judging the reasonableness of a procedure solely by the results achieved by its application." Walker contended that "a procedure should be judged by its own merits."

In a reply letter to Walker dated Oct. 25, 1950, Chairman McWhorter started off: "We are acutely disappointed in your letter." Taking issue with the FCC argument, McWhorter said, "The true test of any separation plan is whether or not it produces equitable results." Be that as it may, the decision to make any change would

seem to be up to the FCC, not the state commissions. On this point, the Walker letter was pretty definite: "In view of the foregoing the commission is unable to find a basis upon which it would consent to the proposed change in the Separations Manual." So, that would seem to be that, for the present. Walker agreed that the FCC "will be glad to consider further information. . . ."

REA Rural Telephone Program Criticized

Another federal activity came in for its share of criticism at the meeting when Commissioner Ray C. Jones, of the Oklahoma commission, told the convention that the state commissions were not consulted in any way in setting up the rules and regulations of the REA rural telephone program. He also took issue with the decision of Congress to place the administration of the act in the hands of the Rural Electrification Administration. He maintained that REA was too electrification-minded to deal objectively with the problems peculiar to the extension of telephone service in rural areas. He noted this as follows:

"The REA at the outset found a virgin field unoccupied and undesired by any one in the electric service field. While the RTA, if you will permit me to use this term from here on out to designate the telephone branch of the present REA, is entering a field almost entirely occupied by either commercial utility lines, mutual organizations or by farmer-owned and operated lines whose prior territorial claims must be respected both from a matter of fairness and under our present Oklahoma laws. If the RTA could, so to speak, start from scratch as the REA was, in most instances able to do, the question would be much simplified; however, the RTA must face the situation as it finds it and so far as we have been able to learn, the RTA set-up is too closely related to the REA line of thinking for it to understand the telephone problem sufficiently to be of much, if any, benefit to that part of the telephone industry that is so badly in need of assistance."

The Oklahoma commissioner philosophically observed that since Congress has seen fit to associate the Rural Electrification Administration program and the telephone program, the commissioners must take the situation as they find it, with hopes that there will ultimately be a "telephone-minded organization within the REA." Another thing he brought out was the failure of Congress to solocit aid in the preparation of the bill from the small telephone companies, the very ones most affected by the act.

Jones tempered his criticism by declaring that he hoped it would be "of a constructive nature" and stated that he was fundamentally for the program.

Without comment the speaker brought together a number of the criticisms which have been levelled at the administrative requirements of the telephone program, such as:

(1) Approval by REA of the borrower's managerial personnel.

(2) Removal and replacement, when, in the opinion of REA, the government security requires it.

(3) Equity requirements.

(4) Transmission promptly to REA of certified copies of the minutes of all meetings of members and of directors.

(5) Agreement to incur indebtedness in addition to the REA loan only with REA's consent.

(6) Minimum requirements.

He then went on to point up his constructive criticism as to the following points:

(1) The requirements are too elaborate and expensive to provide "adequate telephone service to the widest practicable number of users" as contemplated by the act and within the limited appropriation therefor.

(2) The various state regulatory commissions should be consulted in setting up the rules and regulations.

(3) The various regulatory bodies have been ignored in the matter of the consideration of loan applications.

He explained his criticism of elaborate and expensive requirements of the telephone program administrators by saying that he did not believe the rural population is demanding a completely rehabilitated type of service with a suggested rate of $5.00 per month for residence service. He stated that he did not believe the applicant even thinks he can sell that type of service; that it is not fair to "our commission" to even ask approval of such a rate, and that the applicant knows that in asking such a rate he is "pricing himself out of business." Instead Jones took the position that it does not take modern expensive dial equipment to furnish service in rural areas.

Speaking from his knowledge of rural telephone lines in Oklahoma, the commissioner made the interesting observation that it might take from 25 to 30 million dollars in Oklahoma alone, to provide adequate rural telephone service—a sum almost equal to the entire appropriation of REA for telephones in the current fiscal year. This being the case, he observed that it may be many years before all rural applicants will be provided with service unless Congress should see fit to increase the appropriation for loans.

To what extent Jones's criticism might be taken to heart by the telephone people in REA is, to say the least, questionable. His remarks were brought to the attention of REA officials soon after the convention. Two factors may be favorably considered by REA in weighing his remarks: (1) They came from a state commission level, a quarter relatively unheard from since the inception of the program; (2) they came from a state which might well be considered one of the midwest "strongholds" of REA sentiment.

(Please turn to page 70)

REA APPROVES LOAN ALLOCATIONS FOR CO-OP, COMPANY

The Rural Electrification Administration approved two telephone loan allocations of $650,000 during the week of November 13 to 17.

On November 16 a loan allocation of $246,000 for the newly formed Peoples Telephone Cooperative, McKee, Ky., to finance expansion and rehabilitation of its telephone system to provide rural area-wide service. This is the first telephone allocation to be made in Kentucky.

The nucleus of the new cooperative is two existing telephone systems now operating 102 miles of line serving 128 rural establishments in the area. Funds from the allocation will enable the borrower to construct about 70 miles of new pole line, rehabilitate the acquired line, and establish four dial central office units.

The completed system will serve 850 rural subscribers over 172 miles of line.

On November 17 a loan allocation of $404,000 was approved for the Avoyelles Telephone Co., Kinder, La. The present system consists of six exchanges, five of which are dial, and 133 miles of line serving 955 rural subscribers. Funds from the allocation will be used to construct 146 miles of new line, rebuild 83 miles of existing line, install dial equipment for the entire system, and add one new exchange.

When improvements are completed the system will serve 1,185 rural subscribers over 265 miles of line. The expanded system will have capacity to serve over 2,000 subscribers.

NARUC RAPS EXCESS PROFITS

Tax on Regulated Utilities

[**EDITOR'S NOTE:** *The following is the report of the Special Committee on Excess Profits Tax of the National Association of Railroad & Utilities Commissioners presented before the House Ways and Means Committee. The report was read to the recent NARUC convention in Phoenix and that body took unprecedented action on the report.*

The customary action is for the NARUC to merely "receive and print" committee reports, but in the case of the Excess Profits Tax Committee's statement, the convention adopted it as its own report, thereby making the report its own official expression.

The committee's report was presented by John R. Hessey, chairman of the Maryland Public Service Commission.]

* * * *

THE National Association of Railroad & Utilities Commissioners, commonly referred to as NARUC, is an association of the regulatory commissions of this country who are empowered to regulate, inter alia, the rates charged to the public by the gas, electric, communications, steam heating and transportation public utilities serving the American public. The issuance of securities, the determination of reasonable earnings and the adequacy of service rendered to consumers are also among the matters which these commissions are generally empowered to regulate.

Our appearance before Congress is in respect to the proposals to enact an "excess profits" tax. We understand the current need which Congress faces to raise revenues by taxation, and the difficulties of that task; and our viewpoint is certainly not in opposition to the endeavor of Congress to recover through taxation any excess profits that arise out of the country's defense program or war effort.

(See *In the Nation's Capital*" on page ... for other details of NARUC convention.)

However, so far as regulated public utilities are concerned, their normal regulated peace-time earnings, and the normal regulated earnings required to attract and support the large amounts of new capital needed for their vitally essential expansion programs, are not excess profits and should not be reduced by a tax designed to siphon away excess profits arising from the defense or war program. Utilities must have sufficient earnings to maintain their credit. If an excess profits tax should be adopted that does not recognize this need for adequate utility earnings, regulation of utilities by the commissions will be seriously handicapped and the ability of utilities to meet the demand for service and make their vital contribution to the defense program may be dangerously impaired.

Our day-to-day work has provided us with an intimate grasp of the facts concerning this vital segment of the country's economy. We believe that the proposals to levy an excess profits tax on regulated utilities in any of the forms so far publicly proposed or as legislated during World War II would interfere with the functions and obligations of regulatory commissions and would affect the public interest adversely to a substantial degree.

Specifically, the excess profits tax proposals made so far or used heretofore do not recognize that:

(a) The earnings of utilities are already under constant review and are closely regulated down to reasonable returns;

(b) The need for those reasonable earnings is vital to the maintenance of utility credit and the ability to attract capital;

(c) The ability to attract capital is particularly important now because of the huge construction programs which are currently in progress by nearly all utilities in their race to meet the nation's demand for peacetime and also wartime service;

(d) The excess profits tax proposals (or the law heretofore in effect) would result in taxing away a substantial part of reasonable and necessary non-war earnings of public utilities; and

(e) The remaining earnings would generally be insufficient to support credit of utilities and attract the vitally needed new capital.

The proposed tax law, therefore, needs to be so framed that utilities will not be required to pay excess profits taxes when they are not earning more than the reasonable return prescribed for them by regulatory commissions.

Our point is *not* that excess profits from defense or war business should be untaxed. Rather we contend that only *true* defense or wartime excess profits should be taxed, and that in the case of public utilities the standards followed under law by the commissions in regulating rates and earnings constitute the proper measure for distinguishing "normal and reasonable profits" from "excess profits made during or from war business." In making these points we understand and presume that Congress intends to reach normal earnings with the normal and surtax rate, and that it does not intend to levy an additional tax on normal earnings in an effort to recapture war profits.

Experience with the last excess profits tax law and our knowledge that a similar new law would have a far more drastic effect upon the industry than it had during World War II prompts the request that our views be considered.

There are fundamental characteristics and facts that govern the public utility situation; and if an excess profits formula is imposed which does not take into account these characteristics, the result is both unjust and unnecessarily injurious.

(1) The first of these characteristics is that the rates of utilities are regulated *under law* so that there should be no excessive earnings on the property devoted to the public service. One resulting fact is that rates cannot be increased by utility companies at will as, for instance, when a war boom or other boom period would permit higher prices. Another is that utility earnings, with rare exceptions, do not rise in boom periods as do profits in unregulated business. Nor can utilities amass out of earnings the funds needed to pay for large construction projects.

We hold therefore that only when a utility earns on the applicable rate base in excess of the rate of return (after income taxes and other expenses) specified by the regulatory commission hav-

ing jurisdiction, can it have any excess profits.

We also believe that a standard based upon the "average earnings" of a preceding period will not meet the facts (or the needs) of the public utility situation, even as a matter of theory, particularly when as in recent years there has occurred a large growth in the amount of property devoted to the public service.

(2) The second of these fundamental characteristics is that utilities must attract and use large amounts of additional capital to obtain increases in their business and earnings — much more so in relation to their volume of business than any other industry of which we have knowledge. From three to five dollars of capital is required for every dollar of gross business done, and for reasons of economy, and lower cost to their customers, the public utilities use borrowed money (bonds, chiefly) for a large part of their total capitalizations. Approximately 35 per cent to 55 per cent is generally in that form, and these proportions are much larger than in unregulated businesses.

The expansion in the amount of property required to keep up with the public's need for utility service is several times as large now as it was before or during World War II, and the need for new investment capital now is tremendous in comparison with the previous periods. To illustrate, one example may be drawn from the regulated electric power business, which is now spending for new facilities about three billion dollars a year; this is nearly six times the prewar rate, and is twice as much per year as was spent in all the war years 1942-5 together. A broader example may be drawn from the record of securities sold for "new money" purposes (as distinguished from "refunding") by all utilities, excluding railroads. The present rate of securities sold is over 40 times the rate for 1939, and eight times the "defense" years 1940-1, and almost five times *per year* the entire amount raised in that manner for the *entire* war period. The greater need for new stock financing is evidenced by the fact that, in 1949, 129 times as much was sold as in 1939, and 25 times as much as in the "defense" years 1940-1, and nearly eight times as much in one year as in *all* the *four* war years. We must bear in mind in 1940 there were substantially greater plant reserves and, hence, not as great a need for plant expansion.

The additional capital needed to expand utility facilities in the years immediately ahead to serve increasing demands including those of the defense program will probably be as large and possibly larger than the new capital requirements of the recent postwar years. Any tax law which redefines a part of closely controlled normal earnings as "excess profits," and taxes them away, tends to cripple the utility industry's ability to raise the huge sums of new capital required to finish construction programs now under way, and to undertake the necessary new construction. It is this point which concerns us so much.

Therefore, any standard for differentiating between normal earnings and excess war profits based upon invested capital will not meet the needs of the utility situation if it fails to meet two tests:

(a) If the invested capital permitted by the tax law is less than the total actual invested capital utilized (for instance, if there is a disallowance of 50 per cent of the debt capitalization as heretofore), and

(b) If the rate of return permitted on rate base will not provide earnings *after all taxes* which are adequate to maintain the utility's credit and enable it to attract large amounts of new investment capital.

We believe that the general forms of "excess profits" tax laws so far proposed or hitherto used would have the effect of confiscating substantial portions of necessary normal or reasonable profits, with the resulting adverse effects mentioned.

We believe that "normal" or "reasonable" earnings of public utilities should, for the purposes of a war, or defense period, excess profits tax law, be synonymous with the term "allowable" or "fair" earnings used by the regulatory commissions in the exercise of their supervision under law. The points at which the regulated "reasonable" earnings of utilities differ from the general formulas of the excess profits tax law previously in effect or so far proposed, and which cause the discrimination against regulated utilities are these, in the main:

(1) A reasonable price (i.e., rate) for utility service has repeatedly been held to include a "*reasonable return*" upon the property devoted to the public service *after* all expenses, (other than interest), including income taxes. On the other hand, the return on invested capital, provided under the "excess profits" tax law (in the form proposed or heretofore in effect) is *before* allowing for income taxes and the cost or value of the capital employed in rendering service to the public for regulatory purposes is not synonymous with the "tax basis" of the taxpayer's capital investment.

(2) Utility regulation allows for the changes from time to time in the amount of the investment and the amount of earnings constituting a fair or necessary return thereon. Consequently any war-time excess profits tax formula which seeks to define normal earnings in terms of an average of several previous years, (still less, only 75 per cent to 85 per cent thereof) is irreconcilable with the facts upon which regulatory commissions are required by law to and actually do regulate the reasonableness of utility rates and utility earnings to meet actual current conditions.

(3) Utility regulation provides for a reasonable return on all capital expenditures of the utility whereas the excess profits law previously in effect or proposed requires elimination of a portion of the capital invested (such as 50 per cent of borrowed capital, or additions during the taxable year, or so-called inadmissible assets) and allows a rate of return so low that resulting earnings after taxes will not in fact maintain credit or attract necessary capital. The 5 per cent return *before* normal and surtaxes of 45 per cent, which has been proposed before Congress, would be disastrous; and even a 5 per cent return *after taxes* would be inadequate to support the credit of the utility industry.

Our calculations show that with the standards of the 1945 law (and proposed in the recent O'Mahoney-Connally amendment) *the point at which an excess profits tax becomes payable under the invested capital method* for the typically-sized utility *is at about 3⅛ per cent to 3¾ per cent* rate of return on its property devoted to public service. We believe that the same general level would be produced by the recent proposals. We are quite certain that such returns are so much below what is necessary to keep utilities functioning properly that only severe damage can result. The currently huge needs for new capital is the factor which would crystallize the harm, a factor which was not operative in anything like the same degree when the previous excess profits tax law was in force.

The future results under the "average earnings" method cannot be summarized so succinctly; but the earnings record in what would now be a base period (the postwar years) is a subnormal one for utilities in that much growth of their capital investment has taken (and is taking) place from the levels on which those earnings were derived. The facts and needs of the utility situation actually compelled us to grant many rate increases during the postwar years. A redefinition of a part of those earnings as being "excess profits" would indeed be anomalous.

It is our belief, and judgment, that

there should not be excess profits in the utility industry at any time; that regulatory bodies are generally charged with, and seek to secure, the prevention of excessive profits; that in fact they do accomplish the prevention of such excessive profits. We therefore believe that any tax law which seeks to distinguish normal earnings from excess profits should take into account the fact that an existing and competent machinery of regulatory commissions is, and for many years has been, in operation for the identical purpose (among others) of making such measurements and *further* to order preventive adjustments in the selling prices of utility services when necessary.

The regulatory bodies have many guides enunciated by the courts, such as the opinion of the Supreme Court in the Bluefield Water Works and Improvement Co. case, in their determination of reasonable earnings:

"What annual rate will constitute just compensation depends upon many circumstances and must be determined by the exercise of a fair and enlightened judgment, having regard to all relevant facts. A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility, and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties."

We submit the fact that regulatory bodies are competent to so regulate utility selling prices, and in fact they do so regulate them, as to prevent excess profits under the Bluefield or other applicable court decisions which are the law of the land.

Persuasive evidence of the result is the following record of prices charged in the electric and gas industries:

The average price paid for all electric power served by the electric utilities was 2.16 cents per kilowatthour in 1939; it was 1.86 cents per kilowatthour in 1949. (Source: Edison Electric Institute Statistical Bulletin No. 17, page 29.)

The Bureau of Labor Index for "retail prices of electricity" was 96.3 in 1939 and 90.1 in 1949.

The average price paid for manufactured gas was 99.3 cents per MCF in 1939 and 113.1 cents per MCF in 1949. The average price of natural gas was 33.2 cents in 1939 and 35.1 cents in 1949, per MCF. (Source: Computed from American Gas Association's "Gas Facts"—1949; Tables 72 & 88, pages 104, 122.)

The Bureau of Labor Index for "retail price of gas" was 101.1 in 1939 and 103.1 in 1949.

These price trends are in sharp variance with the prices of nearly all unregulated products and services, particularly since the beginning or end of World War II, when sharply increased levels of wage rates and material costs developed. The articles and services comprising the Bureau of Labor's "Cost of Living Index" were 70 per cent higher in 1949 than 1939; the bureau's "Wholesale Commodity Price Index" is 100 per cent higher. This is positive indication that public utilities have through regulation been held to profits that in no way could be termed excess profits.

We respectfully urge that the concept of excess profits for public utilities is essentially inimical to the concept of regulation by statutory commissions; and that assuming Congress does not intend to levy a tax on normal earnings except through the normal and surtax rate, the applicability of a wartime excess profits tax to public utilities is open to serious question. Regulatory commissions should be continued in their duty and their right to determine what constitutes excessive profits in each case, and have conclusively proven that they may be relied upon to discharge their duty to prevent excessive profits by regulating the selling prices of public utility services.

Acceptance of this proposition would be desirable both as a matter of equity and as a matter of practicality in regulatory administration. Nor, as we understand it, would recognition of the unique characteristics of the utility industry involve departure from the principle of recognizing unique circumstances which Congress has followed for many years—in some cases since 1913. Insurance companies, mutual savings banks, commercial banks (as to capital gains and losses), shipping companies, companies affected by depletion allowances (mining and oil enterprises chiefly), and regulated investment trusts all have unique characteristics recognized in our income tax laws.

Most importantly, this proposition would avoid a most difficult regulatory problem. Both the *need* and the *requirement under law* to allow reasonable earnings *after taxes*, will remain if a war or defense excess profits tax is levied. The large increases in rates which are involved under a tax formula which requires $6.00 to $7.00 of additional revenue to be collected from the public in order to produce $1.00 of earnings to the utility after tax would obviously present our commissions with unmanageable problems. It would make it mandatory from a legal standpoint for the regulatory commissions to increase the rates charged by almost every public utility in this nation, which would mean increases in gas rates, water rates, electric rates, bus and railroad fares, and many other rates, which will certainly tend to increase the already dangerous inflationary trend, a trend which has thus far been resisted to a greater degree by the public utilities than by any other group.

If Congress nevertheless decides to apply a war or defense excess profits tax to public utilities, we urge that it is necessary in the public interest that Congress endeavor to bring the definition of normal reasonable earnings for purposes of the excess profits tax into practical conformity with the basis by which those earnings are judged by the regulatory commissions. In other words, the point at which an excess profits tax becomes payable must be sufficiently high to preserve the ability of public utilities to secure the capital they need to render services vital to the public and the defense effort.

We recognize the practical difficulties of introducing into tax legislation the regulatory concepts of "rate base," "rate of return," and "reasonable operating expenses" *as such*, and we recognize that no other formula in lieu thereof will produce exact equality. The following suggestions are, however, pragmatic substitutes:

(a) Some help can be achieved if the definitions themselves are altered. "Invested capital" should recognize all capital, including capital added during the taxable year, as contrasted with the former exclusion of 50 per cent of debt capital and the exclusion of "inadmissible assets." The definition of "average earnings" might be altered *from* the form hitherto used *to* that of the earnings in a selected base year plus 6 per cent to 7 per cent *after* taxes of the additional capital employed since the close of the base year.

The selection of a base year or years under the average earnings formula should recognize that the years 1946-49 inclusive were years of sub-normal earnings in relation to the present investment in utility properties. The average earnings of those years would not be sufficient to pay the interest on the presently outstanding bonds and a reasonable dividend on the presently outstanding stocks. Higher earnings

(Please turn to page 69)

STATION TROUBLE DISPATCHING

By JOHN A. BRACKEN

WHERE certain definite standards of good telephone service have been established, they should be entirely satisfactory to the customer and general public, for it is clear that the better the service, the more it will be used and the greater its value will be to the user. Consequently, proper maintenance of the telephone system, especially that which involves the upkeep of subscribers' stations and lines by promptly testing reported trouble and dispatching repairmen to clear it up are very important factors. In addition to testing and clearing trouble, it is good practice to establish a routine of periodical tests of station line circuits for the purpose of locating and clearing potential troubles before they are manifested in service interruptions.

From the standpoint of testing, certain fundamentals relative to the functioning of a telephone communication system should be understood. The telephone system consists of three principal elements, namely, (1) a source of electrical energy; (b) suitable means for transmitting this energy to the point of use; (c) a receiving device capable of converting the incoming electrical energy received to a useful form, that is, into sound waves resulting in speech reproduction.

The dependability of satisfactory telephonic speech reproduction and its transmission is governed by many factors, among which are the following:

(1) Plant design. A telephone plant may be designed and its construction engineered with great care and thoroughness, but its dependability from a regularity of service standpoint is, to a great extent, dependent upon how it is operated and maintained.

(2) The physical properties of the plant are very important, especially line circuits, or parts thereof, which may be affected by certain conditions, such as any change in resistance. For example, splices are made on the basis that the resistance of the splice is negligible if properly made, but a poorly made splice will introduce high resistance in the circuit and in a short time will seriously affect speech transmission.

(3) Leakage of current from the line circuit, because of low line insulation resistance also will seriously affect transmission.

It is said that the quality of speech transmission is dependent upon the degree of loudness of the reproduced speech, upon the accuracy of its reproduction, and upon the degree of uniformity with respect to both. Also, it is said that the degree of loudness is directly dependent upon the amplitudes of each of the separate components of the speech current in the telephone receiver and on the efficiency of the receiver and the sensitivity of the listener's ear throughout the whole range of speech frequency.

The receiver current is, in turn, dependent upon the efficiency of the transmitter and on the attenuation resulting from the line circuit and station equipment characteristics. By attenuation, is meant the decrease in intensity, value, or amplitude of an electric current between the transmitting and receiving ends; that is, the value of a variable speech current may not be the same in all parts of the telephone line circuit at any given instant, but may decrease gradually as the distance from the transmitting end of the line increases. This reduction is said to be due to the resistance of the circuit conductors, insulation resistance, and relative values of distributed inductance and capacitance.

A remark occasionally overheard, relative to testing a case of subscriber's line trouble, is that it was very difficult to locate. As a matter of fact, a careful analysis of any particular case of trouble will usually reveal the so-called "difficult" case of trouble to locate may, in reality, be only a case that is not readily analyzed as a result of the test. Testing a case of trouble may be likened to any other kind of plant operating problem which, to satisfactorily solve, requires some definite method of attack. It may be merely a problem of determining a ground condition, or simply locating the point of contact between two telephone line conductors.

Therefore, it may be said that the prime requisite in solving testing and dispatching problems is a certain amount of intelligent open-mindedness, which serves to introduce the fact that the more complex a particular test problem may appear to be, the more thought and patience must be exercised in dealing with it. The latest and best trouble testing devices avail nothing if efficiently operated; therefore, in order to obtain the most benefit from the test desk and efforts of the testman, it is a good policy to develop standard testing practices and techniques which represent the basic foundation of performing conclusive tests during the investigation of a trouble report. The tests should be performed to discover whether trouble on the telephone line exists, and the nature of the trouble.

Perhaps the best way of going about this is to test certain parts of the circuit at a time, and by means of the applied tests determine that (1) the line circuit is or is not faulty; (2) if the line wire conductivity and insulation resistance are up to the required standard; (3) whether or not the line is grounded, open, crossed, short-circuited, reversed, has foreign EMF on either side of the line, or to ground, has induction (cross talk) between the line and adjacent circuits; (4) if the station telephone set capacitance is correct, speech transmission satisfactory, dial speed within specified limits, ringing interference between two or more stations exists, or simply the handset off the cradle. Such tests will gradually localize the trouble, and will avoid haphazard testing and waste of time.

To accomplish all this requires: (1) Knowledge of the telephone company's specific instructions relative to performing the test room operating routines; (2) thorough understanding of the testing equipment arrangement and method of operation; (3) familiarity with inside and outside plant conditions, station apparatus, various types of PBX switchboards and key telephone systems; (4) knowledge of telephone line circuits (in this respect it should be borne in mind that the physical properties of a telephone line circuit, or any part thereof conducting speech transmission currents, is affected by various plant conditions); (5) studying and analyzing the causes of service failures and the necessary remedial method to be applied.

In handling a trouble report, two principal objectives are involved, namely: (a) To give the customer the best possible service, and (b) to determine the cause of the trouble and direct proper repair action.

This may be accomplished by getting the necessary facts relative to the trouble reported, organizing those facts, fitting them together and studying the bearing of each on the other. To do this: (1) call the customer and verify the report; (2) talk to the individual concerned; (3) ask questions that bring out information of real importance; (4) establish just what happened, that is, localize the trouble as to whether or not it occurred on incoming or outgoing calls (at one station or all stations, on certain calls or all calls and the last call made or received by the customer on which trouble was experienced); (5) make all required tests; (6) develop a course of action that will best serve the customer; (7) work out plans to handle the situation; (8) review previous reports and actions taken as shown on the subscriber's line card; (9) as a result of the initial test, advise the customer what will be done about the trouble. All that may be required is to say "the trouble does not appear to be at your telephone. We will investigate further and call you," or "We will have a repairman there."

Certain complaints involving "can't be heard" and "can't hear the other party" may be traceable to the manner in which a person speaks into the telephone transmitter. A repetition of such reports can often be prevented by informing the originator of the complaint that the voice is carried most clearly by the telephone when one speaks directly into the transmitter mouthpiece, using a moderate tone, enunciating clearly and distinctly with the lips not more than one inch away. This is rated as the normal position whereby 100 per cent of the acoustic power generated is said to be delivered to the transmitter. If this direction is changed or the distance widened, some of the sound that ought to reach the listener will stray away instead of into the telephone mouthpiece, thus resulting in a reduction of transmission efficiency.

The principal objective in dispatching trouble, is to quickly restore the customer's interrupted service to normal. The work of dispatching is made up largely of human relations, that is, talking to people and directing the activities of the outside repair force. In this respect several basic principles are involved:

(1) Establish a method of handling trouble dispatching in a workmanlike and economical manner, because systemized dispatching procedure keeps things running smoothly.

(2) It is necessary to have the best of feeling between the dispatcher and outside repair force. This relation can be obtained by tolerance and courtesy. The importance of the part courtesy plays in the attitude between the dispatcher and the repair force should not be overlooked, because courtesy can promote goodwill and friendliness toward all concerned, and result in those forces working together as a team.

(3) Handling authority in an understandable manner by determining what is required, checking all the angles, and deciding the best way to do it, making sure instructions are simple, clear and understood by the person to whom they are given, in order that the work may proceed according to plan.

(4) Familiarity with the controlling factors in connection with the number of cases of trouble dispatched to a repairman at one time. These controlling factors are: (a) The repairman's experience; (b) his equipment and mode of transportation; (c) nature of the assigned trouble; (d) sequence with which certain kinds of trouble should be dispatched; (e) available time; (f) locality, that is, urban, suburban or country; (g) kind of service—common battery or magneto, manual or dial; (h) total amount of trouble to be cleared; (i) weather conditions.

(5) To facilitate the dispatching job, maps of the exchange area are helpful when arranged so as to establish districts or zones for the purpose of directing repairmen, as well as in dispatching trouble in such a manner that, when necessary, one repairman can be readily dispatched to help another repairman.

(6) Elapsed time—that is, the trouble should be dispatched and cleared within the established specified time limits after the report has been received and tested.

(7) Trouble dispatched geographically, that is, the repairmen should be dispatched (if within the elapsed time limits) to the cases of trouble located nearest to the point where they may be. However, this is governed by the dispatcher's judgment in connection with the sequence in which a particular kind of trouble affecting certain classes of telephone service is concerned.

Other essentials in dispatching are to provide repairmen with adequate information such as: (1) Customer's name and street address, building, office or apartment number; (2) telephone number; (3) class of service; (4) number of stations; (5) kind of station apparatus; (6) cable pair number and terminal location; (7) nature of trouble reported, and (8) result of tests

and probable location of the fault, that is, whether it would be advisable for the repairman to first make an inspection at the cable terminal, inspect the line, drop wire, or go direct to customer's premises.

Sufficient additional information relative to the cause of trouble, if deemed necessary, should be given. It is better to give too much information, than not enough. If enough information regarding the cause of trouble is not given to the repairman, it will materially slow up the work he must do, and perhaps increase the number of tests he may have to make with his portable testing equipment, especially if he is a beginner without very much experience.

Inasmuch as the dispatcher is a big factor in helping to make a good repairman, it is well for the dispatcher to work very closely with the inexperienced beginner, by suggesting methods which could be used in locating trouble, because with the dispatcher's assistance, the beginner will soon be able to clear many kinds of trouble.

As a representative of the telephone company, the dispatcher comes into telephonic contact with the customers, and what is said and done helps to form their opinion of the company. Consequently, when originating a call from the test desk to a party reporting trouble, the dispatcher should avoid creating an undesirable impression as to the manner in which the telephone company conducts its business through an employe contact by means of the telephone.

Because of the impression made when approaching a person on the telephone, care should be taken in the phraseology used, as the first words spoken are more important than anything said later. Courteous treatment of the customer is important, for it is courtesy and thoughtfulness that please the customer, and put him in a receptive mood to listen to what is said about correcting his service troubles.

Tact is another important point of conduct. Suppose for example, a line reported in trouble is tested and found clear. As a result, the dispatcher rings on the line, and when the party answers he says, "Did you report trouble on your line? I don't find anything wrong with it, you must be mistaken." While impoliteness may not have been intended, the reply lacks courtesy and tact. A courteous approach costs no more than a curt one. If the dispatcher is tactful he can deal with people without friction, and be frank without giving offense.

The dispatcher should immediately inform the customer of the reason for his telephone call. In this respect, the person called can be saved time, as well as knowing immediately what the call is about, with an introductory statement such as, "Good morning (or good afternoon), this is the telephone company repair service calling about your trouble report." With such a statement the conversation has the effect of being more direct and businesslike. However, no matter what form of approach is employed at a particular moment, that is, whatever way the customer's presence on the line is acknowledged, the keynote of the dispatcher's attitude should be an outward expression of friendliness, consideration for the individual and readiness to serve. The customer should always be permitted to explain fully the trouble he has experienced. This will aid in obtaining complete cooperation from the customer and also help in securing the desired information required to properly analyze the cause of complaint. When possible, it is always desirable to ascertain the time the customer will be at home before dispatching a repairman. This will prevent dispatching on "no accesses," thereby saving the time and expense of the visit, which is a waste that adds up to being an unnecessary cost of plant operation.

"Yes, darling, that was *really* Santa."

In closing telephone contacts regarding reported trouble, the dispatcher should inform the customer just what disposition will be made of the trouble reported, otherwise the customer may wait for notification that the service has been restored before attempting to use the telephone after having reported the trouble. Therefore, in such cases where the fault has been located in the central office, cable, line wire, drop, etc., and cleared, the customer should be notified that the line is again in service. Doing so helps to maintain good customer relations.

In view of the many details involved in dispatching, it may be said, that the outstanding qualifications of an exchange trouble dispatcher should be the ability to observe, comprehend, analyze and take care of all conditions present in any test room operation, repair force or customer's relation situation which may occur. This ability is largely gained through doing careful and painstaking work and a desire to give the public prompt, speedy and reliable service through the efficient operation of telephone equipment, and a willing spirit to "personalize" the service through courtesy and friendly treatment of customers.

ABC of the Telephone

By FRANK E. LEE

DECENTRALIZATION appears to be the theme underlying the defense program of our country. Decentralization means population growths in the future will take place in what now may be rural areas. Even today growing pains are being felt in many communities. To the operating telephone company this means a greater demand for telephone service.

In other localities normal population growth will result in increased demands and usage of available telephone plant. Calls between central offices will continue to rise. Sooner or later existing plant facilities will be over-taxed by the demands for more and more service. These greater demands for telephone service and increased usage of plant facilities call for a constantly expanding over-all telephone plant. As time goes by, practically every operating company will feel this unrelenting growth of the telephone industry.

Basically, the demand is for facilities to handle more telephone messages. This means more telephone instruments, increased switching facilities, and a larger number of inter-office message transmission circuits. All of these items represent substantial investments of capital in plant equipment. During periods of rising prices, the actual cost of this new plant often is difficult to determine. In many instances, excessive costs have forced the curtailment of plant expansion programs.

There is another aspect of plant expansion which bears consideration at this time. Value received must be compared with the cost. The program that supplies the most of the three basic facilities at the lowest over-all cost is the best investment. Results are what counts. Therefore, plans should be made to get the best results at the lowest cost.

With these thoughts in mind, consider again the following elements of telephone service:

PART 53. CARRIER TELEPHONY—Section 1. The preceding article in this series appeared in the Sept. 23 issue, p. 30.

(1) Telephone instruments.
(2) Switching equipment.
(3) Message transmission circuits.

Telephone instruments must be provided at every residence and business establishment where telephone service is desired. For most satisfactory results, these instruments must be furnished in types and numbers to meet the needs of the customer. As a result, there is no way of reducing the number of telephone instruments required in a particular plant expansion program.

The next item is switching equipment. Studies of traffic conditions provide the basis for determining how much additional switching equipment is required. The purpose of these studies is to supply information for the solution of two major switching problems, as follows:

(1) Intra-Office Calls. These are calls made between subscribers served by the same central office building.
(2) Inter-Office Calls. These are calls made between subscribers served by two different central office buildings.

An analysis of the average calling rate per station, plus the average holding time per call should be made. The results of this analysis will determine the amount of switching equipment needed to handle intra-office calls. As a general rule, speaking only of the number of circuits required, this will be a more or less fixed quantity—thus, the provision of switching circuits must be made on the basis of actual physical requirements.

From the foregoing discussion, it can be seen that two of the three elements of over-all plant expansion are fixed in quantity. Being fixed in quantity, they are also, to a degree, fixed in cost.

As mentioned previously, the third element of plant expansion is inter-office transmission circuits. For all practical purposes these should be considered as the talking circuits between different central office buildings. Under certain conditions, operating companies can make substantial savings in plant investment in the provision of these circuits. These savings are possible because carrier telephony can provide a certain degree of flexibility in the plans made to provide inter-office circuits.

From the viewpoint of physical plant, an inter-office transmission circuit means a pair of wires placed between two central office buildings. From the viewpoint of carrier telephony, an inter-office transmission circuit means the equivalent of a pair of wires.

The idea of providing voice transmission circuits equivalent to that provided by a pair of wires is the most important fundamental requirement of carrier telephony. This fact is extremely important and frequent reference will be made to it in the study of carrier telephony. Actually, after a reasonable amount of study the average telephone man can understand carrier telephony as well as he can understand a transmitter and receiver circuit.

In carrier telephony, a single pair of wires will carry more than a single telephone conversation. The extra talking circuits are provided by carrier equipment or apparatus. The carrier apparatus is placed at both ends of the line. In so doing, carrier channels are established.

Assume that apparatus is added to provide three carrier channels between two particular points. This will in-

crease the talking circuit capacity of a pair of wires from one to four. The carrier circuits will not interfere with the physical circuit. Also, the various carrier circuits will not interfere with each other. Therefore, for all practical purposes, the result is the same as though three new lines were placed between the two points.

Where can carrier be used? Carrier can be used between any two points where wire circuits are established. Also, carrier can be adapted to radio transmission. Therefore, instead of asking where carrier can be used, the operating company should consider carrier on the basis of economical advantage. This can be done by comparing the cost of carrier equipment with the cost of a corresponding number of wire circuits. All items of cost must be considered in making this comparison. Also, consideration should be given to normal maintenance expense of both systems.

If these studies are accurately made, the operating company generally will find carrier advantageous, even for certain short-haul lines.

Today, carrier is almost a must when additions are made to long distance and other long-haul lines. In the past few years over 80 per cent of the circuit miles added to the nation's long distance circuits have been made with carrier equipment. This in itself speaks well for the acceptance and practicability of carrier telephony.

Inasmuch as carrier provides additional channels for voice transmission, it multiplies the operating company's circuit facilities. These additional facilities are provided without the need of new line construction. Wire, insulators, pole hardware, cable and labor, cost a lot of money these days. As a result, the installation of carrier equipment can mean a real saving in capital expenditures. Generally speaking, carrier equipment is a practical investment if as little as eight miles of wire circuit would be needed to do the job.

Table I presents four typical plant expansion problems. In reaching a decision on what program is best to follow, carrier equipment should be considered. A better picture of the possibilities of carrier will be obtained if each of these cases is considered briefly at this time.

Case I. The present facilities are provided by a single 104 copper line between two given points. The line is supported by brackets and there is room available for a second pair of brackets. The traffic load between these two points has increased to a level requiring an additional circuit. In this instance, the cost comparison lies between single channel carrier equipment and a second pair of wires. The cost of the second pair of wires would include brackets, insulators, wire, labor, etc.

CARRIER COSTS VS. CONSTRUCTION COSTS

Case No.	Present Facilities	Additional Circuits Needed	Average Carrier Cost	Miles of Wire Circuit*
1	1—104 copper lines on brackets.	1	$2,000	8
2	2—104 copper lines on 10-pin arms.	2	3,600	9
3	2—104 copper lines on 10-pin arms.	3	6,000	15
4	three channel carrier to capacity of poles.	9	45,000**	27***

*This figure indicates approximately how far an equivalent wire line could be run for the same cost as carrier. Two pairs of wires would be considered equivalent to two carrier channels, etc.

**This is the estimated installed cost of a 12-channel carrier to replace an existing three-channel carrier.

***Estimate includes new poles and addition of three wire lines, all equipped with three-channel carrier.

Table I

The average cost of a single channel carrier unit is around $2,000. According to some of the latest figures developed on the cost of open wire construction, based upon these same conditions, about eight miles of line can be placed for $2,000.

In addition to the actual cost consideration, the quality of carrier transmission should be considered. As a general rule, certain foreign disturbances which may be present on a physical circuit will not necessarily be noticed in the carrier channel added to the same line.

For *Case 1* the chart indicates that eight miles is the break even point. However, when transmission results and maintenance costs are comprised, carrier may be profitable for lines six or seven miles in length.

Case 2. In Case 2 there are two 104 copper lines in place, supported by a 10-pin cross-arm. Two additional channels are needed. The average cost of two channel carrier equipment is about $3,600.

At first glance, one would expect that if $2,000 would place eight miles of a single circuit, then $3,600 would provide something less than eight miles of a double circuit. This would be true if all costs were fixed per mile of wire, such as wire, insulators, pins, and other supplies. However, labor costs do not increase in direct proportion to the increase in circuits. For this reason, the chart shows that for $3,600, under the assumed conditions, two circuits can be placed for a distance of nine miles.

When maintenance costs are considered, carrier would be advisable under the conditions of *Case 2*, when somewhat less than nine miles of distance is involved.

Case 3. This case assumes the same original conditions as in *Case 2*. As a result, the $6,000 average cost of three-channel carrier equipment would provide for the addition of a three-pair group for approximately a distance of 15 miles.

To digress from the chart for a moment, assume the present facilities are provided with one circuit on brackets and three additional circuits are required. Also, the present poles will not support ten-pin cross-arms. Under these conditions, an expenditure of $6,000, which is the average installed cost of three-channel carrier equipment, would cover the cost of approximately five to six miles of a four pair wire group.

Case 4. This illustrates a case of a pole line filled to capacity and three-channel carrier is already working on all of the available pairs. The traffic need is for nine additional circuits. The fact that the pole line is filled to its capacity means that the need for any new wire circuits would involve the placing of a new pole line to support the needed wires. In most instances, the usual procedure would be to replace the lines and increase its capacity to handle the present needs. Also, provisions usually are made to permit future expansion at a reasonable cost.

However, in this case, 27 miles is estimated as the distance that a three-pair group could be placed, complete with three-channel carrier on each pair. Needless to say, if the present pole line were replaced, as previously suggested,

and wires and three-channel carrier added to provide nine additional channels, the distance covered would be appreciably less than 27 miles.

The foregoing cases dealing strictly in dollars and miles of wire are not to be considered as the only basis on which carrier should be selected. In most instances the distances covered in these examples will be on the maximum end of the scale. Each project to expand inter-office facilities should be carefully analyzed. As a general rule, when this avenue of approach is used, carrier equipment will prove desirable for a large number of short-haul lines.

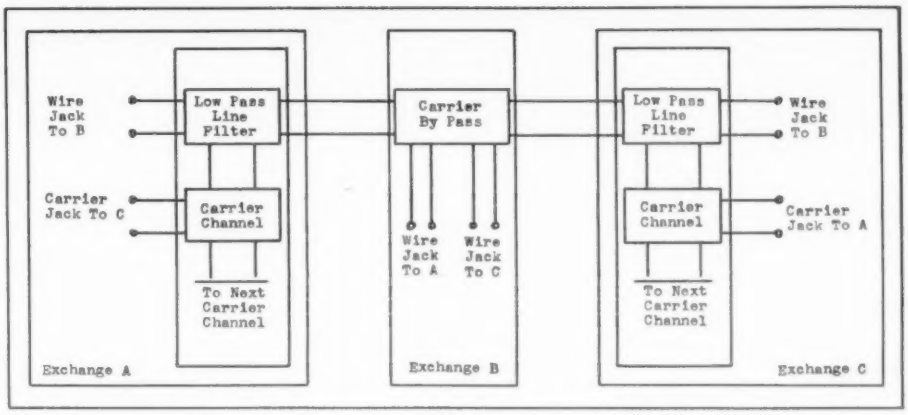


Fig. 3

Typical Carrier Applications

The flexibility of the carrier principle offers many interesting possibilities in making typical applications. Without going into operational details, a few typical applications of carrier are as follows:

Typical Case 1. The block diagram shown in *Fig. 1* illustrates how a carrier channel can be added to provide an additional ring-down trunk between exchange A and exchange B.

The only addition necessary to the physical circuit is balanced low pass line filters installed at each exchange. These filters are necessary to the proper operation of both the physical and carrier circuits. The design of these filters is such that the physical circuit is unaffected by their application.

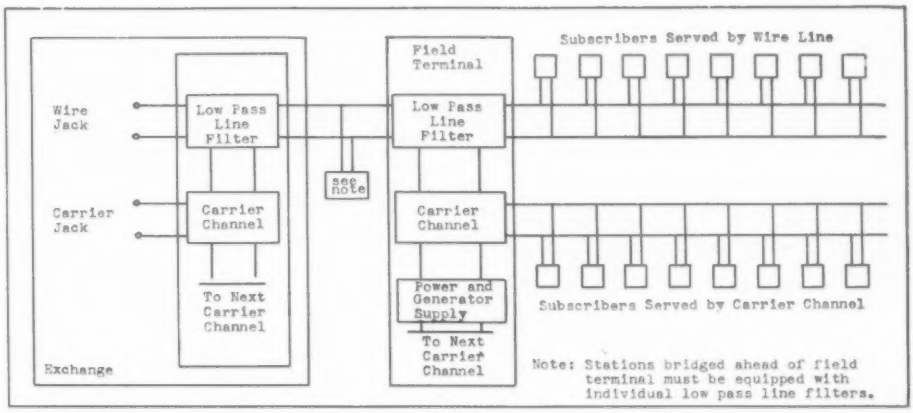


Fig. 4

At the switchboard end, the carrier circuit is terminated on a jack indentical to that used by the physical circuit. This means there is nothing unusual in the operating techniques necessary to complete calls over the carrier circuit. The operator uses the same cords in the same way as when using a physical circuit. This provides further evidence that a carrier channel provides a transmission circuit equivalent to a physical circuit.

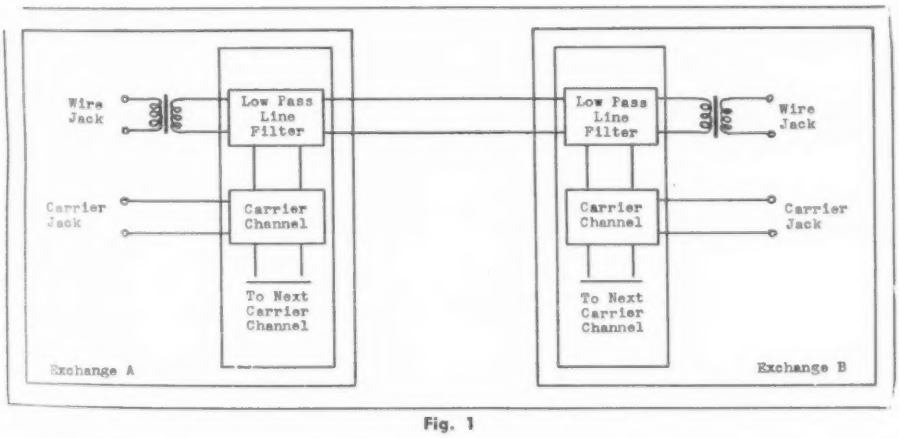


Fig. 1

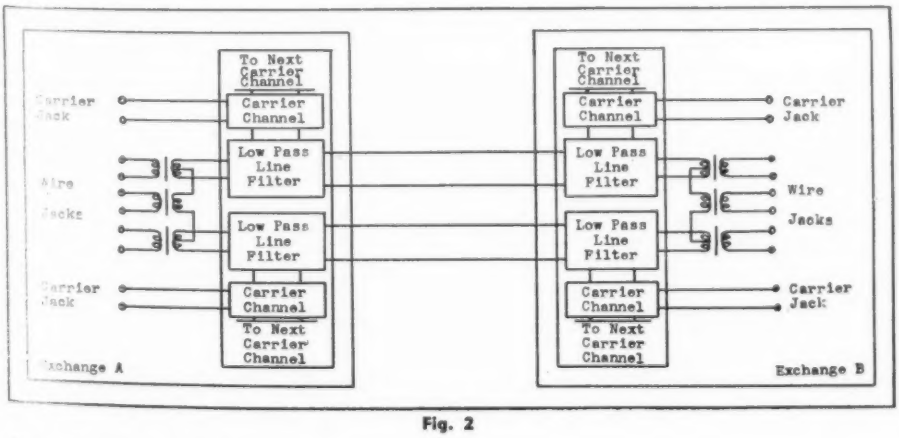


Fig. 2

Typical Case 2. Three wire circuits arranged as a two-wire phantom group are being used between the two exchanges in *Fig. 2.* Actually there are two pairs of wires extended between exchange A and exchange B. Both physical circuits are used to provide a phantom circuit. One pair of wires forms one side of the phantom circuit. The second pair of wires completes the phantom circuit.

The phantom circuit is added by means of center tapped repeating coils installed at each end of the two pairs of wires making up the phantom group. For designation purposes the phantom group is said to consist of a phantom circuit and two side circuits. The center-tapped repeating coil arrangement prevents the phantom circuit talking currents from interfering with either of the side circuits. Also, there is no interference between the two side circuits. For proper operation the repeating coils must be carefully balanced. To attain this balance these coils are manufactured identical in all respects. The two line wires of each

(Please turn to page 59)

NEW DEVELOPMENTS IN TELEPHONY

By RAY BLAIN
Telephony's Technical Editor

TELEPHONE people are always anxious to learn of the latest developments made in their industry. Often new ideas and devices may be used in whole or in part so as to provide needed improvements in a particular exchange or system. In this connection, TELEPHONY makes an effort at all times to furnish, for the benefit of its readers, new ideas which appear to possess merit. With this objective in view, the following information on new products and methods is submitted with the hope that it may prove helpful to telephone operating companies.

Drop Wire Clamps

The old-time trouble of drop wire clamps slipping on small sized wires has been overcome by the introduction of specially designed "P" clamps.

Two types or sizes of clamps are available to accommodate the several standard sizes and types of drop wire.

In general, the "P" clamp will accommodate No. 17 or 18 AWG reinforced parallel and twisted pair wires, while the "PS" clamp is designed for No. 17 to 20 non-reinforced parallel and twisted wires.

The "PS" clamp is similar to the "P" clamp except for the wedge assembly. To the regular "P" clamp wedge, a brass shim has been securely attached to provide for the smaller sizes of drop wire.

The clamp pictured at the top in *Fig. 1* is a conventional "P" clamp. The bottom clamp is a typical "PS" clamp.

Cable Riser Protection

Formerly, when it was necessary to bring a small cable from the underground up along the side of a building or pole, the use of several items of special hardware was considered necessary. This special material generally consisted of a pipe bend, a cap fitting, a "U" guard and pipe straps to attach it to the wall or pole surface.

This job is now made easy by using a length of flexible metal conduit, a short piece of "U" guard, and a few cable straps as indicated in *Fig. 2*. The space around the flexible conduit and the "U" guard and the cable and conduit is filled with compound of duct seal to prevent the entrance of water.

This new method is as good or better, and certainly much cheaper and easier to install, than the previous ones.

Eye-Bolt Wall Attachment

Down through the years, it has been customary to place an eye-bolt through a masonry wall when it was necessary to support an aerial cable feed into buildings. This procedure was, at best, a slow, cumbersome and difficult task and one that did not always exactly please building owners. Sometimes it was extremely difficult to obtain permission to drill a hole of sufficient size through a wall to accommodate the eye-bolt.

A new device that may be used to advantage for this purpose consists of a metal plate about six inches square with an eye welded to the center, as shown in *Fig. 3*. This fixture is attached to a masonry wall by the use of anchors inserted through small holes drilled near each corner of the plate. This arrangement has as much, if not more, holding power than the old style eye-bolt and is certainly much neater and more convenient to install.

Torque Screw Pole Tester

The question of how to determine depreciation, present condition and remaining life of poles in service concerns all users of wooden poles. The condition of that part of the pole above ground can usually be ascertained

Fig. 2. New type cable riser.

Fig. 3. Eye-bolt wall fixture.

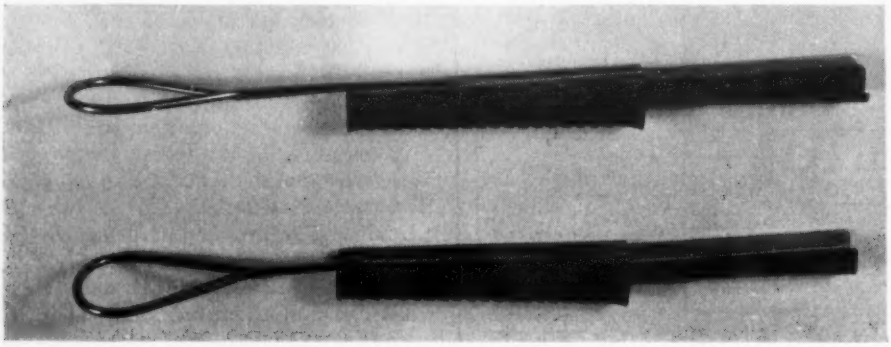


Fig. 1. Drop wire clamps.

easily and with considerable accuracy. However, the part below the ground, which also is usually subject to more rapid deterioration, cannot so easily be inspected in service, nor can its condition be accurately determined by inspection. Yet, the strength and serviceability of the pole depend largely upon the condition of that part concealed beneath the surface of the ground. Therefore, it is very important to be able to determine not only the surface decay of the pole at and below the ground line, but also the condition of the wood in the interior of the pole as well.

Many methods of testing poles have been proposed, however, only a few are currently in common use. Most of these methods depend largely upon the experience and judgment of the inspector and, for this reason, the same pole may be appraised differently by two individuals. Furthermore, neither appraisal may be the actual truth because neither has actually measured the fibre strength of the wood or determined the presence or extent of internal decay.

The increment borer test has been extensively used by large utility companies for many years. This increment borer or core auger consists of a short, hollow-pointed, coarse-threaded worm on the end of a hollow shaft. When screwed into a wooden pole, the sharp edge on the point cuts a small core of wood which feeds back into the hollow shaft. A slender, half-circular scoop is used to remove this sample core of wood from the borer after it has been driven through the pole. While the wood sample shows the character of the solid wood it does not clearly or accurately reveal the location or extent of the rotted wood in the pole.

To overcome these shortcomings, the Division of Industrial Research of Washington State College at Pullman, Wash., directed the development of a torque screw pole tester which may be used to ascertain the strength and condition of wooden poles in service. The device, shown in *Fig. 4*, was invented by Prof. Homer J. Dana, director of the engineering experiment station of the Division of Industrial Research. It has given satisfactory service, both experimentally and in actual use in the field.

Fig. 4. The torque screw pole tester.

Professor Dana's pole tester measures the force required to drive a screw into the pole just below the ground line. The resistance to turning, or the torque, required to drive a small screw probe through a wood pole is closely proportional to the fibre strength of the wood. The amount of torque required is measured and graphically recorded by this patented pole tester. The device was developed by Professor Dana for the Washington Water Power Co. However, the Division of Industrial Research is now prepared to furnish information concerning its use to the general public.

To make the torque screw test, a screw bit closely resembling an increment borer bit without a hollow point is used. When slowly screwed into a pole, its resistance to turning is a measure of the soundness of the wood. Consequently, a graph of this resistance, plotted with respect to the diameter of the pole, will show the condition of the wood at each point through which the bit penetrates.

The instrument is calibrated in terms of pound-inches torque on the screw, and the average torque for sound poles is determined by experiment. Thereafter, a test graph of a pole will reveal its condition relative to the average for sound poles and will

(Please turn to page 39)

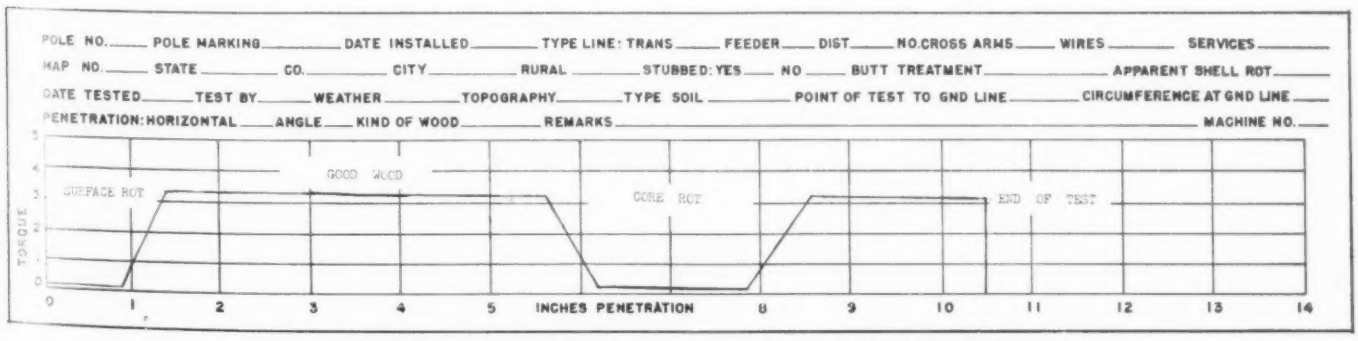

POLE NO. POLE MARKING DATE INSTALLED TYPE LINE: TRANS FEEDER DIST NO. CROSS ARMS WIRES SERVICES
MAP NO. STATE CO. CITY RURAL STUBBED: YES NO BUTT TREATMENT APPARENT SHELL ROT
DATE TESTED TEST BY WEATHER TOPOGRAPHY TYPE SOIL POINT OF TEST TO GND LINE CIRCUMFERENCE AT GND LINE
PENETRATION: HORIZONTAL ANGLE KIND OF WOOD REMARKS MACHINE NO.
GOOD WOOD
SURFACE ROT
CORE ROT
END OF TEST
TORQUE
INCHES PENETRATION
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Fig. 5. Typical sample chart made with torque screw pole tester showing condition of pole.

PLANT TRAINING SCHOOLS A "MUST" TODAY

By DANIEL SEITZ
Cable Superintendent
York (Pa.) Telephone & Telegraph Co.

THE EVER increasing demands for more and better telephone service, together with shorter work hours, retirement programs, etc., are all factors in creating the need for a comprehensive training program in both large and small telephone companies.

No matter how small the system, or how limited is the number of plant employes, a program of study and experimentation can be devised which will benefit everyone concerned.

If the plant is a small one, very likely, the equipment will be of a simple nature. However, there always are problems and they can be solved more readily if the theory, design, construction, etc., are thoroughly understood when repairs must be made.

The small plant group of five persons or less would do well to meet regularly for several hours on specified evenings to pursue a correspondence course and at the same time disassemble equipment, test and reassemble it. Unused suitable equipment for study purposes is usually available in every telephone plant with a goodly portion of this idle equipment having been discarded due to faults.

Locating and clearing these faults, as part of the training course, will provide valuable experience in locating actual trouble and making repairs.

A wealth of information for study and instruction may be obtained from pages of the trade papers, if we have been thoughtful and fortunate enough to assemble our copies into an indexed file for quick reference. Unlimited material can be found in such files for self teaching or the instruction of a class.

The very nature of the small telephone system demands that its personnel be all-around mechanics, familiar with all phases of the plant, whereas, in the larger plant, which is departmentalized, employes must be trained as specialists, according to the need of the department of which they are a part. However, every training program should begin with the teaching of the basic fundamentals involved in plant operation. For example: Teaching that the principal function of all telephone systems is the transmission of sound—what sound is, and how sound vibrations are converted into electrical variations for transmission over wires, radio, etc.

Then go on, step by step, until the types of equipment, etc., are thoroughly understood and the course is completed.

When the training class is made up of personnel from various departments of a plant, it is a distinct advantage to teach theory and fundamentals to the group as a whole, then later divide the group into sections according to the department in which they work and then give them specialized training.

Let us now assume that not only beginners in the business, but experienced men from various departments, make up a class of from 20 to 40 students. If we organize the class so that one experienced person sponsors one or two beginners and assists the instructor in seeing to it that the beginners, under the sponsor's care, understand what is being taught, it will provide interest for the experienced sponsor and, at the same time, greatly assist the beginner by giving him personal attention.

This also applies when actual wiring and equipment are set up for study by the students. By this method the instructor in charge will be relieved of much detail work and can gain from the sponsors a better idea of the progress being made by the individual students. Groups of three persons sponsored by one of the three make an ideal arrangement.

The instruction program should be carefully planned, advancing from the elementary theory to more complex problems, so that students will not be advanced too rapidly, thereby causing some of them to become lost along the way.

There are so many intensely interesting things about the telephone plant that it is comparatively easy to plan your own instruction program in such a manner that it will hold the students' interest at all times.

There are many revealing facts brought out by conducting a training program.

First: Any plant person not willing to spend at least one evening each week as a student, should be considered not interested in his own welfare, education, or advancement, by the company.

Second: It provides a good barometer of personal fitness and desire for advancement.

Third: The general knowledge of the plant and the telephone business is gained by the student and the company.

Fourth: It often indicates in what department a person is best suited to work.

Fifth: Reduces the time required for a student to progress from an ordinary apprentice to a first class mechanic.

Sixth: By contact and association with each other during the school session, friendships are developed and employe relations will improve if proper guidance and leadership are provided.

Personal traits will show up at the school session and an alert instructor can often tactfully correct objectional individual faults.

A splendid opportunity is afforded to teach employes how to promote good public relations, which is so vitally important to every telephone company today.

From time to time, calling attention to some job "well done" by individuals or groups, will make them conscious of the fact that their efforts are appreciated. A little praise, when warranted, is easy to give and does a lot of good, while a lot of discipline is hard to give and often does little good.

The instructor need not be a college professor, but he must know the telephone plant thoroughly and be able to impart that knowledge to the student. He should lead discussions but never argue, and, to be successful, he must have the respect of all the students, both as to his ability and personality.

Frequently persons within the organization have the talent to assist in putting on demonstrations of equipment peculiar to the department in which they work and if they are given the opportunity they will contribute greatly to the success of the teaching program.

Encourage the students to ask questions, for only in this manner can be found what is in their minds, especially the things they do not understand—above all do not consider any honest question a foolish one, for it is certainly not foolish to the person asking it, or else he would not ask it.

Making a joke out of a question or criticizing the questioner may cause him to be reluctant to ask further questions and influence others to feel the same, thereby eliminating one of the most valuable features of instruction—that is, free and open discussion.

When the sessions are held in a central office building, equipment and

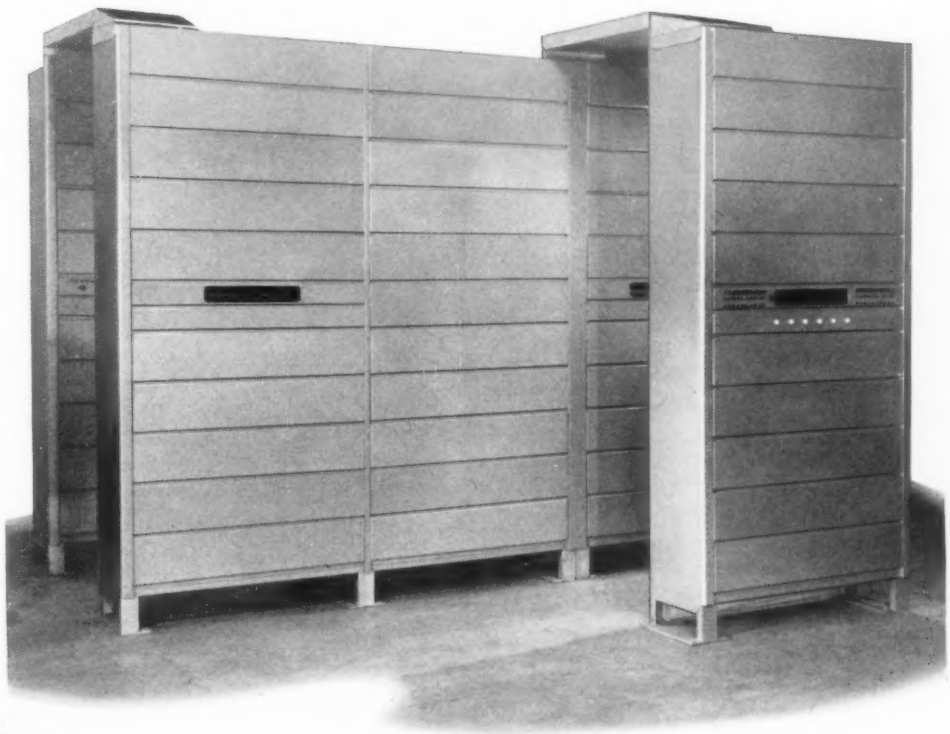
(Please turn to page 69)

KELLOGG *First!...*

CROSSBAR for the Independent Telephone Field

History was made at Polo, Illinois, November 18, 1950, when the first Crossbar Type Central Office Equipment in the Independent Telephone field was cutover....

.... a Kellogg exclusive—developed, patented, manufactured and installed by Kellogg.



KELLOGG SWITCHBOARD AND SUPPLY COMPANY

Established 1897

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CROSSBAR EQUIPMENT

THE PLANT MAN'S *note book*

BY RAY BLAIN TECHNICAL EDITOR

ACCORDING to a recent press release, a nationwide private wire system called "Bank Wire," will connect banks in 54 cities. Placed in operation Nov. 1, this system was engineered and developed by Western Union Telegraph Co. This confidential communications network is operated by company's employes.

• • •

It has been said: "Speech is the gift of all, but thought of few."

• • •

Long distance operators can dial many distant cities direct, giving much faster, as well as more accurate, toll service. In order to obtain full benefit of this speed and accuracy, however, it is necessary to give the operator the out-of-town number. When this is done, calls go through twice as fast. It is, therefore, a good plan to assemble a list of frequently called numbers and keep it available. This list may be assembled by jotting down the number when given to you by the operator.

Most business stationery, catalogs, advertisements and calling cards carry telephone numbers. By observing this information, an accurate business long distance telephone directory may be compiled within a short time and with very little effort.

• • •

Someone has said that pleasant memories must be arranged for in advance.

• • •

We are in receipt of a letter from J. H. Collyer, of Braden Copper Co., Sewell, Chile, S. A., in which he states:

"Abbreviations these days are so numerous that in a great many cases it is almost impossible to read the article in which they occur and, at the same time, understand the references."

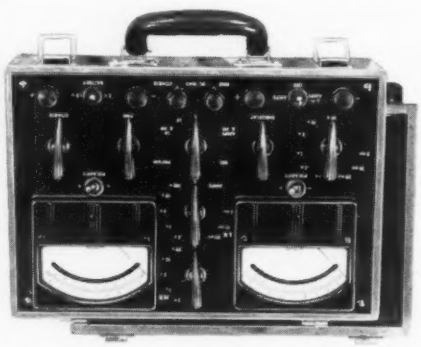
Mr. Collyer suggests that an appropriate appendix, attached to the regular index of all publications, include a list of each abbreviation used in that particular issue.

We agree that strange abbreviations are confusing. For this reason, we always attempt to explain any uncommon abbreviation which appears for the first time in TELEPHONY.

• • •

A new model of the multi-combination meter for electrolysis, corrosion and cathodic-protection testing, now is available and should prove of interest to telephone operating companies that have testing problems of this nature.

The new meter is small, compact and low-priced as compared to previous



models, although it has a low range of two millivolts and special mirror scales 3.9 ins. long. The accuracy is 1 per cent.

With this multi-combination meter, practically all measurements encountered in electrolysis and corrosion investigation and cathodic-protection testing in field and laboratory can be made. By use of a circuit selector switch, the two high-sensitivity dc instruments may be connected into a variety of measuring circuits for measurement of potentials, current, resistance and soil resistivity.

Internal batteries with switch and coarse and fine controls can be used to supply and control current for test purposes. Voltmeters, or voltmeter and ammeter can be used separately or simultaneously. Polarity reversing switches are provided for both current and potential measurements.

• • •

We are informed by Consolidated Edison of New York that you can shave with an electric razor every day for four years for about five cents worth of electricity. Further, you can sew 10 average dresses on an electric sewing machine and the cost of electricity will be only one-tenth of a cent.

• • •

According to Signal Corps engineers, a hand operated crimping tool, which will splice field wire and insulate the joint by means of a special sleeve, is a promising approach to simplified splicing of field wire under tactical conditions. This is a far cry from the old square knot splice, which many former Signal Corps men will remember, and which proved so difficult to tape in order to provide adequate insulation of the joint.

• • •

We received a letter from Stuart M. Johnson, formerly with the Commonwealth Telephone Co., Madison, Wis., and now an engineer with the Signal Corps in Japan. Mr. Johnson gives an interesting account of the laying of a submarine cable between Japan and Korea.

• • •

Man-made interference, or noise heard on radio and television sets when an electric shaver or vacuum cleaner is plugged in, may some day be eliminated as a result of research now being conducted at the Signal Corps Engineering Laboratories, Ft. Monmouth, N. J. Army scientists are staging a fierce attack on this noise by developing suppression methods capable of muzzling the interference. Unsuppressed noise cuts down both range and quality of various communication systems. The latest advance in this 10-year-old war is the perfection of a new type "noise-meter" which can measure accurately the unintentional

interference or radiations produced by oil burners, automobile ignition systems, refrigerators and dozens of other household and industrial products.

Earlier models of this meter covered frequencies used primarily for AM radio signals. The new meter has a greatly extended frequency range and can be used not only for AM signals, but for FM radio signals, radar, television, facsimile and radio-teletype.

• • •

Today there are many small business establishments that have more than one telephone line which require some type of switching arrangement. The Private Automatic Branch Exchange (PABX) is ideally suited to provide this service.

One equipment manufacturer has made it easy for operating companies to sell this type of service and increase their revenue by providing gratis a folder of sales literature which it furnishes upon request. This folder contains a catalog that accurately describes the various switching systems available and explains their numerous features. The push-button type, the attendant-less and the attended PABX are described and explained in detail. A sales manual, which describes how prospects should be approached by representatives of the operating company, also is furnished. Mailing pieces, self-mailers and stuffers that may be sent out with monthly statements also are provided.

In the writer's opinion, this is a most desirable arrangement for operating companies that are interested in increasing their revenue and providing better service for their customers. PBX service long has been neglected in the Independent field and it is high time that something is done about it.

PLANT MAN'S QUIZ

Q. Will plastic insulated Copperweld twisted pair conductor house wire prove suitable for installation in building conduits?

A. This type of wire should prove well suited to this purpose. The insulation is small so that it will not crowd the ducts and the conductors are strong so they will not be damaged, even when extra heavy pulls may be required.

• • •

Q. What type of tool is recommended for cutting three-inch holes in concrete building walls for the installation of underground telephone conduit?

A. We would recommend use of the new core type drills for this job. They may be used in any type of rotary tool. The engineering design of these drills was developed to permit the drilling of holes from ⅞ in. to six inches without the necessity of drilling the entire cross-section of the desired hole size.

This device makes possible the drilling of large holes in heavy concrete of high aggregate without special machinery to rotate the drill. All these drills are designed to operate in portable drills, either air or electrically powered. The core type drill cuts the outside periphery of the hole, leaving the center or core a solid piece of masonry. In drilling deep holes, this can be snapped off and the drill restarted. Therefore, it is possible to drive a core drill with a worm only six inches long through 10 or 12 ins. of concrete. Extension shanks may be fitted to all core drills. These shanks may be obtained in sizes of 12, 18, 24 and 36 ins. in length.

• • •

Q. How does the two-man construction truck differ from the conventional type?

A. This new style truck has the pole derrick, winch and pole digger mounted on the front bumper which assures the operator positive control and perfect visibility at all times. With this type of truck, two men can dig holes and set 30-ft. poles with speed and safety.

• • •

Q. Please describe the lead calcium type storage battery designed for telephone use and point out its advantages.

A. This new type of telephone storage battery, designed for floating operation, now is being manufactured. Over 20 years of research by the Bell Telephone Laboratories has shown that calcium is a better hardening agent than antimony for the lead alloy in the grids and other component parts of the cell. The low self-discharge characteristic of the lead-calcium cell will require an average of only about one-fifth of the power normally used to maintain it in a fully charged condition. The current required to maintain the lead antimony cell rises steadily to several times the initial value as the life of the cell increases while that required to maintain the calcium lead battery remains essentially constant.

Experiments indicate that the rate of positive plate growth of lead calcium is approximately one-fourth that of a cell using 12 per cent antimonial grids.

Since water consumption of a cell is in direct proportion to current required, water additions to a lead calcium cell will average only one-fifth as much.

With antimony eliminated in the lead alloy, the periodic equalization charges of unequal cells formerly required by aging lead-antimonial batteries will be largely eliminated.

The capacity of this new type battery will remain at high levels throughout its life, since the complete absence of antimony from the cell will eliminate the variance in cell capacities formerly caused by "antimony poisoning" of the negative plates.

The use of plastic (Polystyrene) jars and covers practically will eliminate breakage in transit and has reduced weight from 15 to 33 per cent, depending upon the size involved.

It is claimed that this new battery, both positive and negative plates, should have at least 75 per cent of the rated capacity at the end of 25 years of service on the floating routine basis.

On the full-floating routine, these batteries will operate successfully throughout their life on an average of 2.15 plus or minus 0.01 volt per cell within the limits of 2.10 and 2.20.

• • •

Q. Will it be possible to make advantageous use of the new "strandlinks" and "strandvises" on a toll line storm guying job?

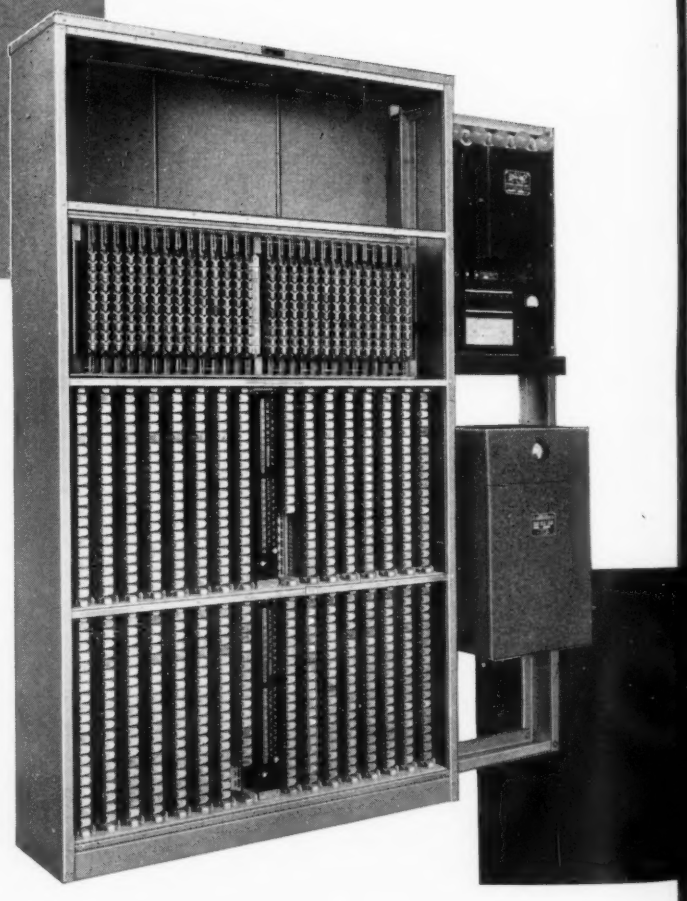
A. We can see no reason why this new device could not be used to advantage on a job of this nature. In fact, this arrangement can be used for any type of guying and anchoring for either open wire or cable.

On a large storm guying job, it is believed that the strand could be cut to length ahead of time and then the guys assembled and installed on the job. Considerable savings in time and material should be realized on a job of this nature, providing it is properly engineered in advance.

V V

Someone has said that slang is a device for making ignorance audible.

THE LEICH *Dial System*



The Leich Dial System was designed to provide a more practical dial switchboard for exchanges of moderate size.

Because it was designed for the smaller exchange operator, it offers many advantages not available in dial switchboards that have been scaled down to small size.

First of all, the Leich Dial System is a greatly simplified unit. It's easier to understand and operate. There are no moving mechanical parts to maintain or adjust. All operations are performed by full size, dependable relays. Any good switchboard man can learn the service routine.

Dependable operation for long periods without any attention other than a regular check-up is another advantage the Leich Dial System offers.

Installation of a Leich Dial System costs less and is done more quickly because all the parts are factory-tested and simply jacked-in to the framework at the exchange. A one hundred line board is usually completely installed and ready to cut over in from a week to ten days.

All the parts, including lines and links, can be jacked-in when additions are required. Your own switchboard man can add ten lines to a Leich Dial System in ten minutes. He can add an extra link (connecting circuit) in an hour or two, with no factory installer necessary. This means a considerable dollars and cents savings when adding capacity for the new subscribers who invariably sign up when an exchange is converted to dial.

Practically everything that would make it practical and possible for the small exchange to convert to dial is incorporated in the Leich Dial System. The small buildings on the opposite page are a few of the more than one hundred exchanges now operating Leich Dial Systems.

If a dial conversion is planned for your exchange we will be glad to send you complete information and work with you in every way possible. Leich Sales Corporation, 427 West Randolph Street, Chicago 6, Illinois.

LEICH

MEADOW, TEXAS

McCLELLANSVILLE, SOUTH CAROLINA

MARBLE ROCK, IOWA

DEXTER, KANSAS

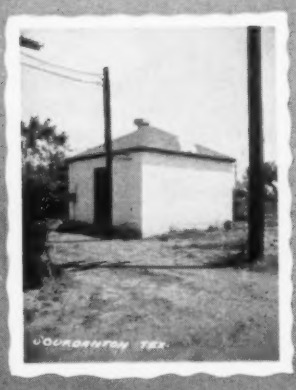
DUNNING, NEBRASKA

LINGLE, WYOMING

LEWELLEN, NEBRASKA

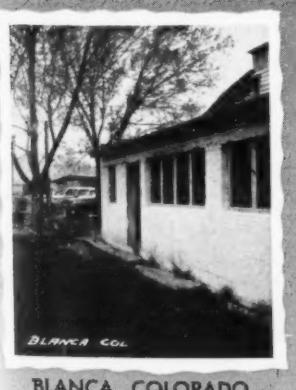
EMELINE, IOWA

Especially Designed FOR SMALLER EXCHANGES



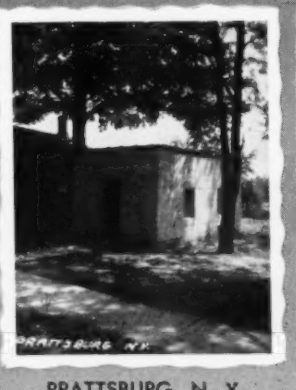
JOURDANTON, TEXAS

ESTELLINE, SOUTH DAKOTA



BLANCA, COLORADO

BELMORE, OHIO



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ROSHARON, TEXAS

MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907

telephony's *SAFETY* bulletins

No. 22—SAFE USE OF SCREWDRIVERS. A screwdriver is one of the most common tools used by a telephone man. Read this bulletin for a review of safety tips on the use of screwdrivers.

by FRANK E. LEE

TAKE a look at your screwdrivers. Yes, you see them every day, and you use them every day. But this time look at your screwdrivers and think of safety. A screwdriver is one of the most common tools used by a telephone man—maybe that's why it can be one of the most dangerous. When a man joins the organization we are likely to assume that he knows how to use a screwdriver. But does he?

Let's delve a little deeper into this problem. First of all, what is a safe screwdriver for the telephone man?

High Quality Is Important

Select screwdrivers that are made of high grade steel. This type of steel will not chip, bend, or break easily, and from a cost standpoint they are "cheaper" in the long run.

The handle should be convenient to grip, and in the proper proportion. A small screwdriver should have a small handle, not only to provide better balance, but also the small handle acts as a safety factor, as it prevents its use where a larger screwdriver is proper.

The handle of the screwdriver should be of high grade wood or composition that will not splinter easily, and firmly attached to the shank. Some manufacturers fasten a leather ferrule on the handle butt, for better grip.

Correct Size Is Essential

A *husky* job needs a *husky* screwdriver. As an example, to safely place a knob with a big two and a half inch No. 14 galvanized wood screw, a large five-inch screwdriver is usually required. Smaller No. 8 wood screws used to install station equipment require a smaller four-inch screwdriver, while work on small mounting screws and connecting blocks can be handled best and safest with a three-inch screwdriver.

Some jobs require a tool with a long blade, other jobs call for a thin bladed screwdriver. Good safety practice is to use the proper screwdriver for each job. Too small a tool may break or bend, too large a tool may slip or break a screw, with an accident hazard being created in either case.

Safe Usage Counts

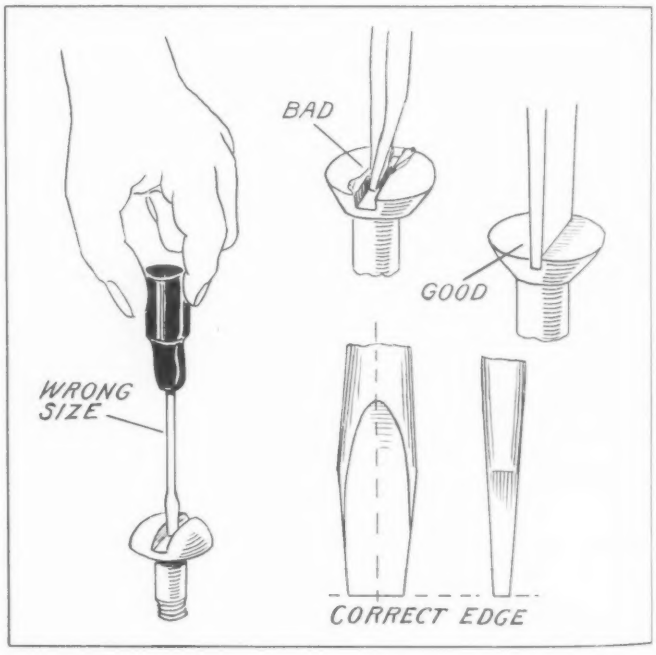
There is only one handle on a screwdriver, but usually it's a two-handed tool, with one hand acting as a driver and the other as a guide. If you are right-handed, grasp the handle with the right hand and hold the shank just back of the blade with the left hand. The most practical position is with the left palm up—similar to the position when holding a rifle. In this position the screw itself can be seen more readily.

Small size screws can be safely placed in soft wood without providing a lead hole. However, for the larger screws or in hard wood, a lead hole is important from the safety viewpoint. A screw that is difficult to drive is an accident maker. Wood screw manufacturers usually recommend a 75 per cent depth of thread to provide maximum holding power plus ease of installation. With this objective in mind, the selection of a lead hole drill size is simplified.

Larger screws can be driven easier if they are lubricated. Generally, the most satisfactory lubricants are paraffin, soap, candle wax, or bees wax. Apply the lubricant to the screw threads or place a small portion in the lead hole. Oil or grease is difficult to handle without damaging equipment or soiling the mounting surface. Use care to prevent getting the lubricant on the screwdriver tip or in the screw slot.

When starting the screw the left hand should be slid down to the tip of the blade. In this position the screw is held firmly and squarely against the blade. Apply only minimum forward pressure. The turning of the screw should cause the threads to dig into the wood.

After the screw is started, slide the left hand to the original position behind the blade, and continue to apply minimum forward pressure. If the tip of the blade is square with the shank and if the blade fits the screwdriver slot, there is little chance that the screwdriver will slip. When a screw turns hard, the lead hole is too small or the screw is not properly lubricated.



A screw correctly installed will hold a piece of apparatus or material firmly against the mounting surface. When this is accomplished, stop turning the screw. Excessive turning will break down the wood fibres and weaken the completed installation, also will place undue strain on a screwdriver with a resultant safety hazard.

These suggestions for safe usage of screwdrivers are made to prevent slippage of the tool. When a screwdriver slips there is a tendency to pull upward on the hand holding the tool, with the possibility of a serious jab in the face, body or eyes. For this reason, avoid crowding close to the work. Keep your face back in a position slightly to one side of the work.

Occasionally, screws must be placed in small parts, such as a transmitter. The safe practice is to keep the hand away

from the back of the object. This will help prevent a puncture wound if the screwdriver should slip.

When not in use, screwdrivers should be carried in a leather tool pouch or placed in a tool bag or other suitable holder. A screwdriver in the pants pocket is a safety hazard. Carried with the tip exposed it is a hazard to yourself and others, carried with the tip in the pocket it can easily be jabbed into yourself.

Inspect for Safety

Check over your screwdrivers regularly. Make sure of these things:

(1) Handle should be solid. Check for broken, split, cracked, or mushroomed handle. (Mushrooming indicates improper use of a chisel.)

(2) Examine the blade. A loose, broken, or bent blade should be properly repaired or the screwdriver replaced. This means, too, that the shank should be straight.

(3) Check the tip. The tip must be square with the shank. File down a tip that is chipped or rounded. If the tip can not be filed to the dimensions and general proportions of a new screwdriver, replace the tool because it is unsafe and has earned retirement.

Also, observe if the tip is soft because the temper was destroyed by improper use. In this case the economical and safe answer is to replace the tool.

A good screwdriver used properly is a safe tool. To keep it safe, always make sure the tool is in good condition—then take the time to be sure you are making use of all safe practices when using the tool. The checks and inspections required to do these things will take very little time.

Remember, where your safety and the safety of others is concerned—YOU HAVE TIME FOR SAFETY.

New Developments In Telephony

(Concluded from page 29)

also show the extent of surface and of heart rot. Other data written on the graph card at the time of the test show the location of the pole, its size, age, visible condition, and any other pertinent information desired to make the record represent a useful history of that pole.

Since a wood pole deteriorates most rapidly in that part which is underground, the tests usually will be made on the butt below the ground line. This will require the removal of some earth from one side of the pole to permit the screw probe of the tester to be driven horizontally into the wood at the point where the test is desired. For the purpose of comparison, a test on the same pole may also be made at some designoted distance above the ground line.

In cases where a pole stands in a pavement or in a sidewalk, the pole tester may be adjusted to drive the screw probe into the pole at an angle. If only one test is made on the pole, it will be made at right angles to the line because the maximum wind imposed upon a pole in service is usually horizontally at right angles to the line. If two tests are made below the ground line, they will usually be made at right angles to each other.

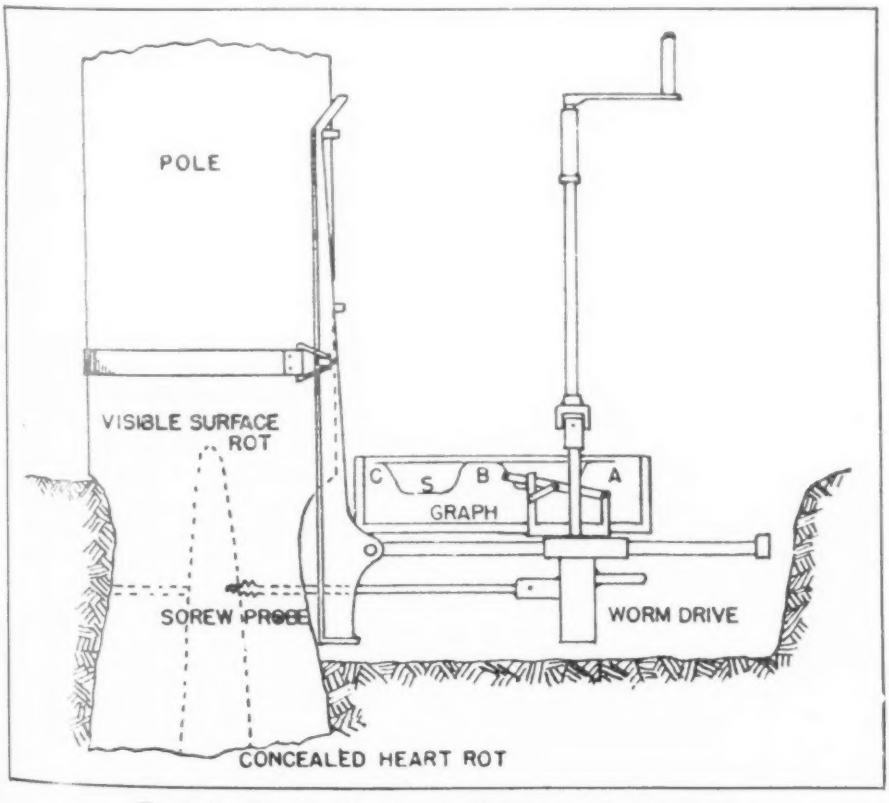


Fig. 6. Drawing shows how torque pole tester is set up on a pole.

By the use of colored pencils, two or more tests on the same pole can be made on one chart, thus affording ease in comparison. For example, insert a red pencil in the pantograph of the pole tester for the test below the ground line parallel to the wire on the pole, a blue pencil for the test perpendicular to the line wires, and a black pencil for the test above ground, etc. Only a few seconds time is required to change the pencil.

The torque screw pole tester is folded into a compact unit for carrying. Constructed largely of magnesium castings, the total weight of the instrument is only 15 pounds. The tester is attached to the pole by means of a belt and then unfolded to the test position. At the conclusion of the test, it is again folded and removed from the pole by releasing the belt.

V V

Pay Telephones Amuse Children

Among the fascinating educational toys seen at Christmas counters this season is a pay telephone for small fry. Blocks fit in coin holes above the dial. When the receiver is returned to the hook, the blocks drop into the coin return slot.

V V

Supervision Book Available

Cullom & Ghertner Co., publishers of Harry C. Walker's book, "The Technical Element in Supervision" has informed TELEPHONY that they have a limited number of copies of that book on hand for sale to the telephone industry. They may be purchased through TELEPHONY.

V V

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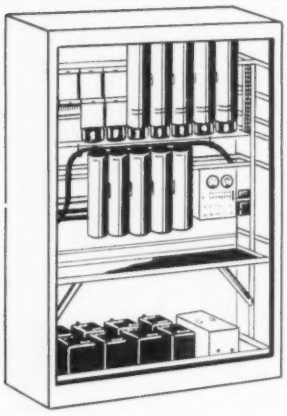

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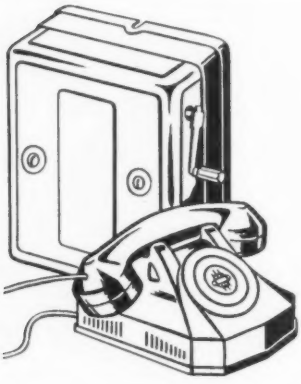

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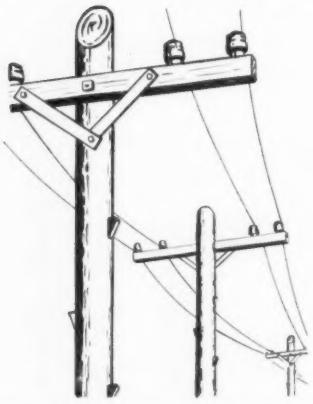

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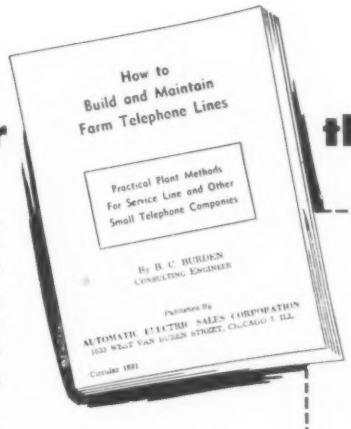

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TRENDS IN JOINT USE OF POLES

By W. O. TRETTIN
Member
USITA Plant Committee

With telephone companies and utilities expanding the joint use of poles, Mr. Trettin's discussion on this subject is of importance to Independent telephone companies. He presented this paper at the Plant Conference of the recent convention of United States Independent Telephone Association.

PART II

THE following is the text of the specimen contract suggested by Mr. Trettin for consideration by telephone companies in making agreements with power companies for joint use of poles. PART I of Mr. Trettin's paper, given at the Plant Conference of the recent convention of the United States Independent Telephone Association, which discussed points to be considered in making joint use agreements, appeared on page 11 of the Nov. 25 issue of TELEPHONY.

SAMPLE JOINT USE CONTRACT

This agreement made this___day of _____by and between _____ _____a corporation of the State of _____, hereinafter called the "Electric Company," party of the first part, and_____a corporation of the State of_____, hereinafter called the "Telephone Company," party of the second part is effective as of the___day of_____.

Witnesseth:

WHEREAS, the Electric Company and the Telephone Company desire to cooperate in accordance with the "Principles and Practices for the Joint Use of Wood Poles by Supply and Communication Companies" reissued July, 1945, by the Joint General Committee of the Edison Electric Institute and Bell Telephone System, and to establish joint use of their respective poles when and where joint use shall be of mutual advantage; and

WHEREAS, the conditions determining the necessity or desirability of joint use depend upon the service requirements to be met by both parties, including considerations of safety and economy, and each of them should be the judge of what the character of its circuits should be to meet its service requirements and as to whether or not these service requirements can be met properly by the joint use of poles.

NOW, THEREFORE, in consideration of the premises and the mutual covenants herein contained, the parties hereto, for themselves, their successors and assigns, do hereby covenant and agree as follows:

ARTICLE I

DEFINITIONS

For the purpose of this agreement, the following terms when used herein, shall have the following meanings:

STANDARD SPACE is the following described space on a joint pole for the exclusive use of each party, respectively (except only as to the portion of its said space which, by the terms of the annexed specifications, may be occupied by certain attachments therein described of the other party):

(1) For the Electric Company, the uppermost 4 feet;
(2) For the Telephone Company, a space of 2½ feet at a sufficient distance below the space of the Electric Company to provide at all times the minimum clearance required by the specifications referred to in Article VII, and at a sufficient height above the ground to provide the proper vertical clearance for the lowest horizontally run line wires or cables attached in such space;
(3) The allocation of space and load on a standard pole shall be approximately 60 per cent to the Electric Company and approximately 40 per cent to the Telephone Company.

STANDARD JOINT POLE means a pole which is just tall enough to provide standard space for the respective parties as aforesaid. Specifically, a standard joint pole under this agreement shall be a thirty-five (35) foot wood pole, of a class sufficient in strength to meet the requirements of the_____ State Electrical Code for jointly used poles, but not greater in strength than that of a Class 5 pole or less in strength than that of a Class 6 pole.

ARTICLE II

Voltage Limitations

Joint use under this contract shall be limited to (a) constant potential ac circuits not grounded, of not more than five thousand (5,000) volts between conductors; (b) constant potential ac circuits, one side or neutral grounded, of not more than twenty-nine hundred (2,900) volts to ground; (c) constant potential dc circuits of not more than seven hundred and fifty volts (750) to ground and (d) constant current series circuits carrying not more than seven and one-half (7.5) amperes.

ARTICLE III

Scope of Agreement

This agreement shall be in effect in the state of_____at such locations as are specifically described in *Exhibit A* which is attached and hereby made part of this agreement; and shall cover all wood poles of each of the parties now existing or hereafter erected in the aforesaid territory when said poles are brought hereunder in accordance with the procedure hereinafter provided. Each party reserves the right to exclude from joint use (1) poles which, in the owner's judgment are necessary for its own sole use; and (2) poles which carry, or are intended by the owner to carry, circuits of such character that, in the owner's judgment, the proper rendering of its services now or in the future makes joint use of such poles undesirable.

ARTICLE IV

Placing, Transferring, or Rearranging Attachments

(a) Whenever either party desires to reserve space on any pole of the

(Please turn to page 46)

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other, for any attachments requiring space thereon, not then specifically reserved hereunder for its use, it shall make written application therefor, specifying in such notice the location of the pole in question, and the number and kind of attachments which it desires to place thereon and the character of the circuits to be used. Within ten (10) days after receipt of such notice, the owner shall notify the applicant in writing, whether or not said pole is of those excluded from joint use under the provisions of Article III. Upon receipt of notice from the owner that said pole is not of those excluded, and after the completion of any transferring or rearranging which is then required in respect to attachments on said poles, including any necessary pole replacements as provided in Article V (a), the applicant shall have the right as licensee hereunder to use said space for attachments and circuits of the character specified in said application in accordance with the terms of this agreement. Provided, that in case of emergency only, verbal permission from local representatives may suffice, which shall be supplemented by the formal requirements.

(b) Except as herein otherwise expressly provided, each party shall place, maintain, rearrange, transfer, and remove its own attachments, (including any tree trimming or cutting incidental thereto) at its own expense and shall at all times perform such work promptly and in such a manner as not to interfere with the service of the other party.

ARTICLE V

Erecting, Replacing, or Relocating Poles

(a) Whenever any jointly used pole, or any pole about to be so used under the provisions of this agreement, is insufficient in size or strength for the existing attachments and for the proposed immediate additional attachments thereon, the owner shall promptly replace such pole with a new pole of the necessary size and strength, and make other such changes in the existing pole line in which such pole is included, as the conditions may then require.

(b) Whenever it is necessary to change the location of a jointly used pole, by reason of any state, municipal, or other government requirement, or the requirements of a private property owner, the owner shall, before making such change in location, give notice thereof in writing (except in case of emergency when verbal notice will be given, and subsequently confirmed in writing) to the licensee, specifying in such notice the time of such proposed relocation, and the licensee shall, at the time so specified, transfer its attachments to the pole at the new location.

(c) Whenever either party hereto is about to erect new poles within the territory covered by this agreement, either as an additional pole line, as an extension of an existing pole line, or as the reconstruction of an existing pole line, it shall notify the other in writing at least sixty (60) days before beginning the work (shorter notice, including verbal notice subsequently confirmed in writing, may be given in cases of emergency) and shall forward with such notice its plans showing the proposed location and character of the new poles and the character of circuits it will use thereon. The other party shall, within ten (10) days after the receipt of such notice, reply in writing to the party erecting the new poles, stating whether such other party does, or does not, desire space on the said poles, and if it does desire space thereon, the character of the circuits it desires to use and the amount of space it wishes to reserve. If such other party requests space on the new poles and if the character and number of circuits and attachments are such that the owner does not wish to exclude the poles from joint use under the provision of Article III, then poles suitable for the said joint use shall be erected in accordance with the provisions of paragraph (d) and (e) of this article.

(d) In any case where the parties hereto shall conclude arrangements for the joint use hereunder of any new poles to be erected, the ownership of such poles shall be determined by mutual agreement, to the end that the Electric Company shall at all times own approximately 60 per cent of the total number of poles jointly used under this agreement, due regard being given to the desirability of avoiding mixing ownership in any given line.

(e) The cost of erecting new joint poles coming under this agreement, either as new pole lines, as extensions of existing pole lines, or to replace existing poles, shall be borne by the parties as follows:

(1) A standard joint pole, or a joint pole shorter than the standard, shall be erected at the sole expense of the owner.

(2) A pole taller than the standard, the extra height of which is due wholly to the owner's requirements shall be erected at the sole expense of the owner.

(3) In the case of a pole taller than the standard, the extra height of which is due wholly to the licensee's requirements, the licensee shall pay to the owner a sum equal to the difference between the cost in place of such pole and the cost in place of a standard joint pole, the rest of the cost of erecting such pole to be borne by the owner.

(4) In the case of a pole taller than the standard the extra height of which is due to the requirements of both parties, the licensee shall pay to the owner a sum proportional to space used or reserved for the difference between the cost in place of such a pole and the cost in place of a standard joint pole, the rest of the cost of erecting such a pole to be borne by the owner.

(5) In the case of a pole taller than the standard, where a height in addition to that needed for the purpose of either or both of the parties hereto is necessary in order to meet the requirements of public authority or of property owners, the excess cost of such pole due to such requirements shall be borne between the licensee and the owner in accordance with the space used or reserved.

(f) In any case where a pole is erected hereunder to replace another pole solely because such other pole is not tall enough to provide adequately for the licensee's requirements, and where such other pole, whether it carry space reserved for the licensee's use or not, had at the time of its erection, been pronounced by the licensee as satisfactory and adequate for its requirements, the licensee shall, upon erection of the new pole, pay to the owner, in addition to any amounts payable by the licensee under paragraph 3, 4, or 5 of Section (e) of this Article, a sum equal to the then value in place of the pole which is replaced and the pole removed shall thereupon become the property of the licensee.

(g) Any payments made by the licensee under the foregoing provisions of this Article for poles taller than standard shall be in lieu of increased rentals and shall not in any way affect the ownership of said poles.

(h) When replacing a jointly used pole carrying terminals of aerial cable, underground connections, or transformer equipment, the new pole shall be set in the same hole which the replaced pole occupied, unless special conditions make it necessary to set it in a different location.

ARTICLE VI

Procedure When Character of Circuits Is Changed

When either party desires to change the character of its circuits on jointly used poles, such party shall give sixty (60) days' notice to the other party of such contemplated change and in the event that both parties agree to joint use with such changed circuits, then the joint use of such poles shall be continued with such changes in construction as may be required to meet the requirements of the_____State Electrical Code for the character of

circuits involved. In event, however, that the both parties fail within thirty (30) days of such notice to agree in writing to such change, then they shall cooperate in accordance with the following plan:

(1) The parties hereto shall determine the most practical and economical methods of effectively providing for separate lines and the party whose circuits are to be moved shall promptly carry out the necessary work.

(2) The cost of re-establishing such circuits in the new location as are necessary to furnish the same business facilities that existed in the joint use at the time such change was decided upon, shall be equitably apportioned between the parties hereto. In the event of disagreement as to what constitutes an equitable apportionment of such costs, the total cost less allowance for salvage and betterment, excluding the cost of the new pole line, shall be divided equally between the parties hereto.

ARTICLE VII

Specifications

Except as otherwise provided in Section (b) of Article IX the joint use of the poles covered by this agreement shall at all times be in conformity with the requirements of the_____State Electrical Code.

ARTICLE VIII

Right of Way for Licensee's Attachments

No guarantee is given by the owner of permission from property owners, municipalities or others for the use of its poles by the licensee, and if objection is made thereto and the licensee is unable satisfactorily to adjust the matter within a reasonable time, the owner may at any time upon thirty (30) days' notice in writing to the licensee, require the licensee to remove its attachments from the poles involved and the licensee shall, within thirty (30) days after receipt of said notice, remove its attachments from such poles at its sole expense. Should the licensee fail to remove its attachments as herein provided, the owner may remove them at the licensee's expense without any liability whatever for such removal or the manner of making it, for which expense the licensee shall reimburse the owner on demand.

ARTICLE IX

Maintenance of Poles and Attachments

(a) The owner shall, at its own expense, maintain its joint poles in a safe and serviceable condition, and in accordance with the requirements of the_____State Electrical Code and shall replace, subject to the provisions of Article V, such of said poles as become defective. Except as otherwise provided in Section (b) of this Article, each party shall, at its own expense, at all times maintain all of its attachments in accordance with the_____ State Electrical Code and keep them in safe condition and in thorough repair.

(b) Any existing joint use construction of the parties hereto which does not conform to the said specifications shall be brought into conformity therewith as follows:

Within one year from the date of this agreement, 10 per cent of the poles involved in such existing joint use construction, and the attachments on said poles, and thereafter 15 per cent per annum shall be brought into conformity with said specifications; provided, however, that this provision shall not be so applied as to require any then existing cables carried on the street side of any such poles to be rearranged to occupy the field side thereof, and provided further that neither party shall be required to relocate cable terminals installed prior to the date of this agreement which are above the communication cable.

When such existing joint use construction shall have been brought into conformity with said specifications, it shall at all times thereafter be maintained as provided in Section (a) of this Article.

The cost of bringing such existing joint use construction into conformity with said specifications shall be borne by the parties hereto in the manner provided in Section (b) of Article IV and Section (e) of Article V.

ARTICLE X

Abandonment of Jointly Used Poles

(a) If the owner desires at any time to abandon any jointly used pole, it shall give the licensee notice in writing to that effect at least sixty (60) days prior to the date on which it intends to abandon such pole. If, at the expiration of said period, the owner shall have no attachments on such pole, but the licensee shall not have removed all of its attachments therefrom, such pole shall thereupon become the property of the licensee, and the licensee shall save harmless the former owner of such pole from all obligation, liability, damages, cost, expense, or charges incurred thereafter, because of, or arising out of, the presence or condition of such pole or of any attachments thereon; and shall pay the former owner a sum equal to the then value in place of such abandoned pole or poles or such other equitable sum as may be agreed upon between the parties.

(b) The licensee may at any time abandon the use of a joint pole by giving due notice thereof in writing to the owner and by removing therefrom any and all attachments it may have thereon. The licensee shall in such case pay to the owner the full rental for said pole for the then current year.

ARTICLE XI

Rentals

In consideration of the fact that on a standard joint pole the Power Company uses 60 per cent of the available space and strength and that the Telephone Company uses 40 per cent of the available space and strength, it is deemed equitable that a differential rate be charged. For each and every pole owned by the Telephone Company any portion of which is occupied or specifically reserved by the Power Company, the Power Company will pay the Telephone Company $2.00 per annum. Conversely, the Telephone Company will pay the Power Company $1.35 per annum for each and every pole owned by the Power Company any portion of which is occupied or specifically reserved by the Telephone Company.

The rental period for a standard pole hereunder shall be a calendar year. On or before Jan. 30 of each year, each party hereto shall submit a report to the other party of the number of poles on which space was *occupied by* or *reserved* for the other party as of Dec. 31 of the previous year. Within thirty days following such date, each party shall submit a written statement to the other party giving the number of poles on which space was occupied by or reserved for the other party as of such date. Rental payment shall be made within thirty (30) days of the receipt of such statement.

Payments for that portion of poles in excess of a standard pole, or other amounts due, other than annual rentals for a standard pole, under the terms of this agreement shall be paid within sixty (60) days of the receipt of a statement of the amount due.

No rental shall be paid by the licensee for the use of any pole of the owner where such use consists only in attaching guys thereto, or in attaching thereto wires or cables of the licensee for the purpose of providing clearance between the pole and such wires or cables, and not for the purpose of supporting the said wires or cables.

ARTICLE XII

Periodical Readjustment of Rentals

At the expiration of five (5) years from the date of this agreement, and at the end of every five (5) year period thereafter, the rental per pole per annum thereafter payable hereunder shall be subject to readjustment at the request of either party made in writing to the other not later than sixty (60)

days before the end of any such five (5) year period. If within sixty (60) days after the receipt of such a request by either party from the other, the parties hereto shall fail to agree upon a readjustment of such rental, then the rental per pole per annum so to be paid shall be in the same ratio as outlined in Article I (3) of this agreement to the then average total annual cost per pole of providing and maintaining the standard joint poles covered by this agreement. In case of a readjustment of rentals as herein provided, the new rentals shall be payable until again readjusted.

ARTICLE XIII

Defaults

If either party shall make default in any of its obligations under this contract and such default continue thirty (30) days after notice thereof in writing from the other party, all rights of the party in default hereunder shall be suspended, including its right to occupy jointly used poles and if such default shall continue for a period of thirty (30) days after such suspension the other party hereunder may forthwith terminate this agreement as far as concerns future granting of joint use.

If either party shall make default in the performance of any work which it is obligated to do under this contract at its sole expense, the other party may elect to do such work, and the party in default shall reimburse the other party for the cost thereof. Failure on the part of the defaulting party to make such payment within thirty (30) days upon presentation of bills therefor shall, at the election of the other party, constitute a default under the first clause of this article.

ARTICLE XIV

Liability and Damages

Whenever any liability is incurred by either or both of the parties hereto for damages for injuries to the employes or for injury to the property of either party, or for injuries to other persons or their property, arising out of the joint use of poles under this agreement, or due to the proximity of the wires and fixtures of the parties hereto attached to the jointly used poles covered by this agreement, the liability for such damages, as between the parties hereto, shall be as follows:

(1) Each party shall be liable for all damage for such injuries to persons or property caused solely by its negligence or solely by its failure to comply at any time with the specifications herein provided for: Provided that construction temporarily exempted from the application of said specifications under the provisions of section (b) of Article IX shall not be deemed to be in violation of said specifications during the period of one such exemption.

(2) Each party shall be liable for all damages for such injuries to its own employes or its own property that are caused by the concurrent negligence of both parties hereto or that are due to causes which cannot be traced to the sole negligence of the other party.

(3) Each party shall be liable according to space allotted for all damages and injuries to persons other than employes of either party, and according to space allotted for all such damages and injuries to property not belonging to either party that are caused by concurrent negligence of both parties hereto or that are due to causes which cannot be traced to the sole negligence of the other party.

(4) Where, on account of injuries of the character described in the preceding paragraphs of this article, either party hereto shall make any payments to injured employes or to their relatives or representatives in conformity with (1) the provision of any workmen's compensation act or any act creating a liability in the employer to pay compensation for personal injury to an employe by accident arising out of and in the course of the employment, whether based on negligence on the part of the employer or not, such payments shall be construed to be damages within the terms of the preceding paragraphs numbered 1 and 2 and shall be paid by the parties hereto accordingly.

(5) All claims for damages arising hereunder that are asserted against or affect both parties hereto shall be dealt with by the parties hereto jointly; provided, however, that in any case where the claimant desires to settle any such claim upon terms acceptable to one of the parties hereto but not to the other, the party to which said terms are acceptable may, at its election, pay to the other party its proportion according to space allotted of the expense which such settlement would involve, and thereupon said other party shall be bound to protect the party making such payment from all further liability and expense on account of such claims.

(6) In the adjustment between the parties hereto of any claim for damage arising hereunder, the liability assumed hereunder, by the parties shall include, in addition to the amounts paid to the claimant, all expenses incurred by the parties in connection therewith, which shall comprise costs, attorneys' fees, disbursements, and other proper charges and expenditures.

(7) The Telephone Company is to assume liability and damages for 40 per cent of the total claim and the Power Company for 60 per cent of the total claim wherever joint responsibility is involved.

ARTICLE XV

Existing Rights of Other Parties

If either of the parties hereto, has, prior to the execution of this agreement, conferred upon other, not parties to this agreement, by contract or otherwise, rights or privileges to use any poles covered by this agreement, nothing herein contained shall be construed as affecting said rights or privileges, and either party hereto shall have the right, by contract or otherwise, to continue and extend such existing rights or privileges, it being expressly understood, however, that for the purpose of this agreement, the attachments of any such outside party shall be treated as attachments belonging to the grantor, and the rights, obligations, and liabilities hereunder of the grantor in respect to such attachments shall be the same as if it were the actual owner thereof. Where municipal regulations require either party to allow the use of its poles for fire alarms, police, or other like signal systems, such use shall be permitted under the terms of this Article.

ARTICLE XVI

Service of Notices

Wherever in this agreement notice is provided to be given by either party hereto to the other, such notice shall be in writing and given by letter, mailed, or by personal delivery to the Electric Company at its office at ——— or to the Telephone Company at its office at ——— as the case may be, or to other addresses as either party may, from time to time, designate in writing for that purpose.

ARTICLE XVII

Term of Agreement

Subject to the provisions of Article XIII herein, this agreement may be terminated, so far as concerns further granting of joint use by either party, after the 1st day of July, —— upon (1) year's notice in writing to the other party provided, that if not so terminated, it shall continue in force thereafter until terminated by either party at any time upon one year's notice in writing to the other party as aforesaid, and provided further that notwithstanding such termination, this agreement shall remain in full force and effect with respect to all poles jointly used by the parties at the time of such termination.

ARTICLE XVIII

Assignments of Rights

Except as otherwise provided in this agreement, neither party hereto shall assign or otherwise dispose of this agreement or any of its rights or interests hereunder, or in any of the jointly used poles, or the attachments or rights-of-way covered by this agreement, to any firm, corporation, or individual, without the written consent of the other party; provided, however, that nothing herein contained shall prevent or limit the right of either party to mortgage any or all of its property, rights, privileges, and franchises, or lease or transfer any of them to

(Please turn to page 61)

Maximum Economy!

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ADEQUATE RECORDS VITAL

Georgia Independents Told

By R. C. RENO

GEORGIA Independent telephone companies were warned that they must take steps to establish and maintain complete and adequate accounting records if they are to run their businesses efficiently and secure sufficient rates, by two speakers at the annual convention of the Georgia Telephone Association, held Nov. 9 and 10 at Macon.

While the smaller companies cannot afford to keep elaborate records they can and should maintain simplified accounts that will keep them informed as to the status of their business, N. Knowles Davis, chief engineer of the Georgia Public Service Commission, declared.

He listed five advantages of adequate accounting records as follows:

"(1) They permit the compilation of accurate federal income tax returns with little effort.

"(2) They are needed to record proper wage payments and payroll deductions.

"(3) They are needed to file proper reports with the public service commission.

"(4) They are especially necessary in a rate case in order for a company to justify the need for increased rates.

"(5) They are necessary when a company faces the necessity of obtaining additional capital funds.

"(6) They keep the owners of the business informed as to its financial condition at all times."

Mr. Davis reported that the Georgia commission is contemplating establishing a simplified uniform system of accounts for small companies and he suggested that the Georgia association appoint a committee to work with the commission in setting up such a system.

Speaking on the subject, "Modified Accounting for Small Telephone Companies," H. O. Edson, Chicago, Ill., assistant treasurer of the Kellogg Switchboard & Supply Co., pointed out that an effective control of a telephone business is like a brake on an automobile —"it is there if you use it." All telephone companies keep records, he said,

MRS. WILBUR NABORS, Monroe, Ga., and R. C. RENO, editor of TELEPHONY, renew acquaintance at Georgia convention. J. H. WRIGHT, Monroe, is in background.

but the point is "they must be organized."

The particular need for organized accounting records has been increased recently by the inflation which this country has experienced, Mr. Edson stated. Based on the U. S. Department of Commerce wholesale price indices, he estimated that equipment costing $10,000 in 1940 would today cost $16,500. Projecting this inflationary trend through 1970, the same equipment would cost, at that time, over $40,000.

Mr. Edson strongly emphasized the need for current rate revision by telephone companies to offset probable losses to capital that inflation is causing. Only through adequately organized accounting records can the telephone operator control his rates and credit under today's conditions, Mr. Edson said.

The convention was presided over by President W. C. Martin, Fitzgerald. In his opening remarks he pointed out that the telephone industry faces the greatest challenge in its history in expanding facilities to meet the unprecedented demand for telephone service. He admonished those at the convention that no telephone company can afford to neglect its responsibility to render adequate service and that each company must take steps to solve whatever problems face it in order to meet the public's service demands.

Perhaps the most severe problem for most telephone companies, especially the smaller ones, is getting adequate rates and in many cases the raising of new capital, Mr. Martin said. He urged all companies needing increased revenue to apply to the public service commission for higher rates. If a company can secure sufficient revenue to cover operating expenses and produce an adequate return, its problem of attracting new capital will be eased to a great extent, Mr. Martin pointed out.

He recommended that all Georgian telephone companies, which have not done so, move toward an improvement and expansion of service and secure increased rates. He stated that it has been shown that, in the majority of cases, improved service results in substantial gains in stations and he said the public is willing to pay higher rates for better service.

In his annual report Secretary-Treasurer H. M. Stewart, Cornelia, reported that Independent company stations in that state had increased more than 22 per cent during the year 1949 and it appears that by the end of 1950 the

D. C. JACKSON, Dawson, Ga., TELEPHONY'S Georgia convention photographer and MRS. J. H. WRIGHT, Monroe.

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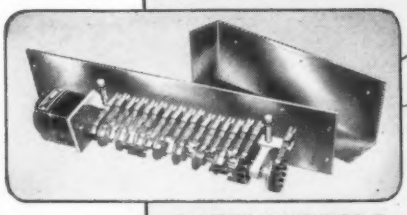

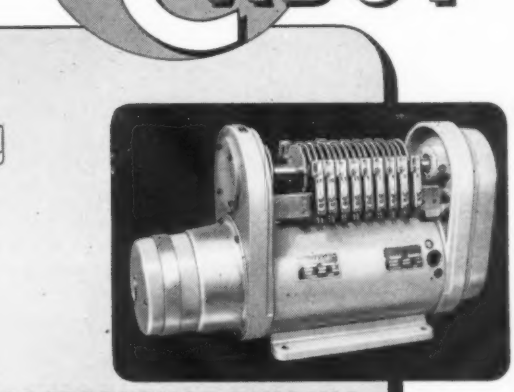

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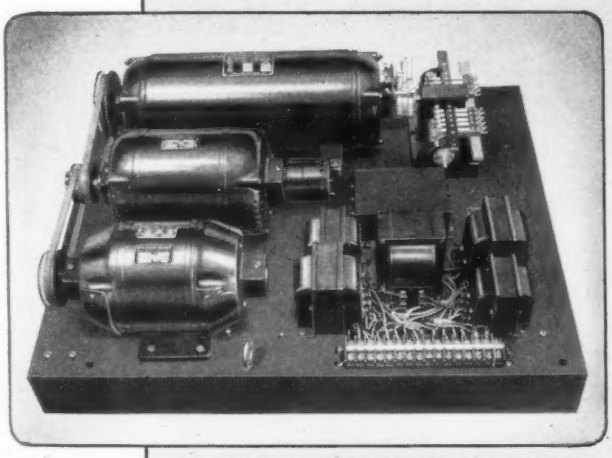

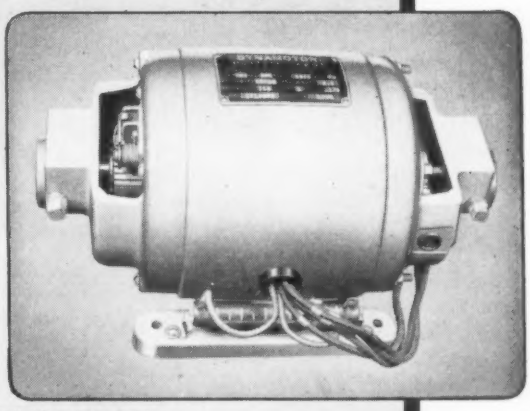

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ACCESSORIES: Tone Alternaters (a brand new item to produce busy and dial tones); tone commutators and interrupters can be supplied as a part of any of the above machines.

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"WE'RE CELEBRATING OUR 75TH ANNIVERSARY THIS YEAR"

number of Independent telephones in Georgia will be more than double the number at the cose of 1945. Stated in another way, Mr. Stewart said, Independent telephone companies of Georgia will have installed as many telephones during the five years ending Dec. 31, 1950 as they installed during the preceding 50 years.

While this is a record of which to be proud, many companies still have sizeable backlogs of unfilled service applications and every effort must be made to catch up with service demands, he said.

Mr. Stewart paid tribute to the Georgia Public Service Commission for its cooperation with telephone companies. He reported that so far in 1950, 20 per cent of the companies in the state have obtained rate increases, affecting more than 40 per cent of the Independent exchanges, and that at least a half dozen rate increase applications are pending before the commission.

"We would like to urge that, in filing an application for rate adjustments, the sights should be set high. If your recommendations are granted you will then be able to go ahead and furnish the type of service you would like to render. If you aim too low the responsibility for an inferior service is *still* on your shoulders.

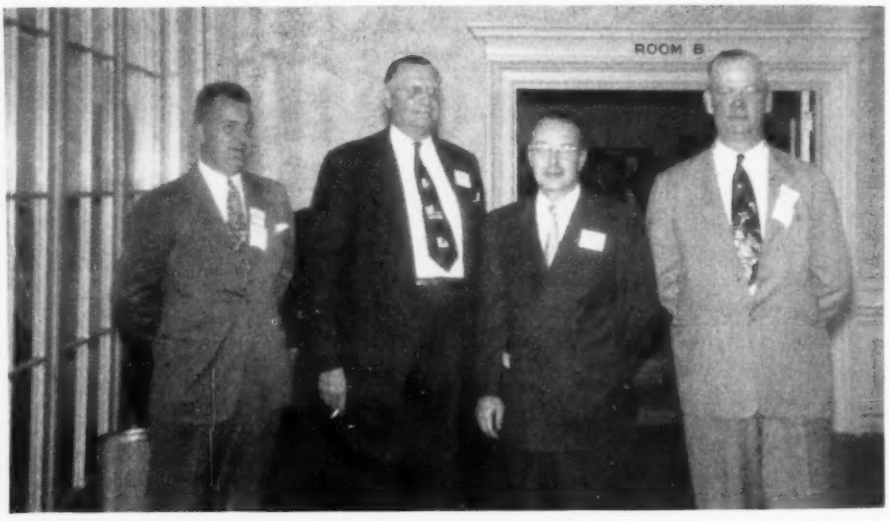
"Any fear of pricing the commodity out of the market should be quickly dispelled by a casual look at the record. Not only has the number of telephones in service been doubled in the past five years but there is yet a long list of unfilled applications for new outlets and a tremendous backlog of requests for upgrading. This progressive list of applicants for higher grade service is compelling proof of the fact that Mr. John Q. Public places *service* first and that rates are still incidental to him," Mr. Stewart said.

George C. Richert, Washington, D. C., engineer of the United States Independent Telephone Association, gave a report on the activities of the national Independent association and its work in advising with various government boards and agencies.

He emphasized the work of the association's Defense Committee with the Armed Forces in bringing about the proper placement of telephone men in the various military branches.

Also he told of the association's activities in connection with helping the National Securities Resources Board in arranging for proper communications services in the government's plan for restoration of public services in case of atom bomb attacks on this country.

R. C. Reno, editor of TELEPHONY, addressed the convention on the subject "Preserving Our Freedom is a Full-Time Job."



These photos were taken during the Georgia convention in Macon.

One of the most down-to-earth addresses, entitled "The Pause That Refreshes," was given by Earle Blomeyer, Elizabethtown, Ky., general manager of Kentucky for the Southern Continental Telephone Co., and president of the Kentucky Independent Telephone Association.

He brought out that the fundamentals of the telephone business today are the same as in the early days of the industry and that in making decisions today we should consider the

(Please turn to page 66)

A Shop on wheels

built to take the trouble out of trouble-shooting

This new International Truck will help prevent the lost time and lost tools that mean trouble on trouble-shooting jobs.

That specially-designed body is all-steel and built like a safe. It gives a service man more compartment area—so he can carry more tools and supplies with him wherever he goes. His equipment is kept in order, protected from the weather by a sliding roof under the ladder rack and slam-action compartment doors that can all be locked with one key.

You'll find more built-for-the-job efficiency under the hood—in International's new Silver Diamond valve-in-head engine. Developed exclusively for light trucks at a cost of 11 million dollars, the Silver Diamond combines power and pickup with proved gas and oil economy.

That new Comfo-Vision Cab is the "roomiest on the road"—with deep-cushioned seating, controlled heating and ventilation, perfect visibility from behind a big one-piece Sweepsight windshield.

New Super-steering gives the driver greater control of the truck from a more comfortable position . . . more maneuverability with less effort at the wheel.

And for the payoff—this truck is *heavy-duty engineered*, built with all-truck stamina by the specialists who developed heavy-duty International Trucks, the leaders in the field.

If that sounds good on paper, the next step is in the direction of your International Truck Dealer or Branch salesman. It will be a move for the good of your business—why not make it now?

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INTERNATIONAL TRUCKS

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Courts and Commissions

Two New England T&T Personnel Changes Announced

Frederick A. Cosgrove, Massachusetts general manager of the New England Telephone & Telegraph Co., has been elected a vice-president. He will be responsible for revenue requirements, and will be succeeded as general manager by Hugh W. MacDonald, who has been in charge of staff operations.

Mr. Cosgrove is a graduate of Tufts College who joined the company in 1924 and progressed through various administrative assignments in the traffic department to his recent post. He succeeds Charles S. Watt, who has been made assistant vice-president of the American Telephone & Telegraph Co.

Mr. MacDonald joined the New England company in 1923, held supervisory posts in the plant department until 1943 and was with the AT&T in New York until 1945, when he returned to New England as general plant supervisor. In August, 1950, he was named assistant vice-president.

V V

R.I. Court Asked to Bar Repeated Rate Rise Pleas

Eugene J. Phillips vigorously argued before the Rhode Island Supreme Court at Providence on Nov. 20 that his client, the New England Telephone & Telegraph Co., should have unlimited right to seek rate increases whenever conditions thus warrant. Mr. Phillips appeared before five justices on appeal from a decision on Sept. 16 by Public Utilities Administrator Thos. A. Kennelly refusing to grant the company a rate advance filed on Mar. 1 to yield $1,700,000 more annual revenue. (On Nov. 15 the company petitioned Kennelly for an emergency rate increase of $850,000 per year pending the outcome of the company's appeal to the high court for relief—TELEPHONY, Nov. 25, p. 18).

Abraham Belilove, attorney for the public, contended that the court should sustain Kennelly and rule that new rate schedules should be tried out for "a reasonable time period" before a public utility could come forward and seek new increases. He held that such trial periods ought to cover units of years rather than weeks of months. In rebuttal, Mr. Phillips informed the court that the company's actual experience measured during two periods of 12 and five months, respectively, were not producing enough revenue to give the company a fair return on its Rhode Island investment.

The new rates allowed by the hearing board last December yielded a return on intrastate operations of only 4.96 per cent on the rate base against the company's claim that 7.5 per cent is a fair return. He stated that the company desires a court order to Kennelly to reopen hearings and receive testimony as to its recent experience with the existing rates.

V V

Kentucky Company Seeks $522,000 Increase

The Kentucky Telephone Corp., Lexington, on Nov. 15 asked the Kentucky Public Service Commission for a $522,000 annual rate increase.

The commission did not set a hearing date on the proposed rate boost. But the company, which serves central Kentucky, said it wanted the new rates to become effective Dec. 6.

It can put them into effect on that date by posting bond even before the commission begins hearings on the case. The bond guarantees customers a rebate in case the commission denies the raise in rates.

V V

Authorizes Rate Raise

The South Dakota Public Utilities Commission, on Nov. 10, approved the requested rate increases of the Western Telephone Co., Rapid City. The increased rates are to become effective 30 days from date of the order.

V V

Wyoming Independent Sold

The Wyoming Public Service Commission has approved the sale of the Pinedale Telephone Co to Earle F. Crandall.

Mr. Crandall is also manager of the Mountain States Telephone & Telegraph Co. exchange at Riverton.

Three of "Brassiere-Brigade" Get One-Year Sentences

Three members of Miami's "brassiere brigade" were sentenced on Nov. 20 to a year in state prison. The three, Marie Orr, Mrs. Betty Corrigan and Mrs. Billie Ruth McNabb, were sentenced by Judge Ben C. Willard (TELEPHONY, Nov. 25, p. 28).

They were convicted recently by a criminal court jury. Miss Orr and Mrs. Corrigan were found guilty of grand larceny and Mrs. McNabb was convicted of helping the two remove stolen money from the Southern Bell Telephone & Telegraph Co.

They were among 13 persons indicted in the theft of telephone company coins from the room in which money from paystations was counted. They were charged with slipping rolls of quarters into their brassieres and smuggling them out of the building.

V V

N. C. Commission Reports On Gain in Telephones

The North Carolina Utilities Commission reports that telephone installations in North Carolina during the first nine months of 1950 totaled 121,050, against 79,570 removals, for a net gain of 41,480; and indications are that the year's total will approximate the 55,296 net gain in 1949.

During the first nine months of 1950 there were 19,482 installations in urban centers, 14,684 in rural areas, and 7,314 in extensions, principally in private branch exchanges.

As of Oct. 1, according to the commission's figures, there were 540,602 telephones in service in North Carolina. Of the total, Southern Bell Telephone & Telegraph Co. had 314,109.

V V

Bell of Canada Receives Permanent Rate Increase

The Bell Telephone Co. of Canada has been granted authority by the Board of Transport Commissioners to increase its service charges in Ontario by substantial amounts.

The new rates represent the board's final decision on the application of the

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The 6870 sells for $1.30. It has a 70 square inch area and a rated soil-anchor holding strength of 14,000 pounds in class 4 soil (crumbly damp).

This anchor has all the fine features of the famous Chance eight-inch 8-Way. It is "streamlined" to expand quickly—no bolts to cut—holding wires shear with a single blow of the expanding bar. There is no wasted area between blades and the weight of the load is carried by eight blades instead of two or four . . . All good reasons why the Chance 8-Way is on the specs of the biggest anchor users in the telephone industry—reasons why you should specify Chance six-inch 8-Way on *your* next order.

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company for authority to charge higher tariffs which was filed in October, 1949. The interim increases were approved last July, pending this final decision.

V V

Minnesota Exchange Cut Over

The 235 stations of the Garfield exchange of the Gardonville Co-operative Telephone Association, Brandon, Minn., were cut over to dial service recently, according to Paul Ekstrand, manager. The association has a total of 792 stations in its three exchanges, and expects to cut over the remainder of the system in 1951.

V V

Sells Kansas Independent

The La Harpe (Kan.) Telephone Co. was sold by Owner John Gurss to Harry Lee of Kansas City on Nov. 1. The company is to be managed by Grover Raymer of St. Louis.

V V

Higher Rates Approved

The Southland Telephone Co., Atmore, Ala., was granted a rate increase in Florida by the Florida Railroad & Public Utilities Commission on Nov. 22.

V V

Summary of Commission Rulings and Hearings

Kansas Corporation Commission

Dec. 18: Hearing on application of Hiattville Telephone Co. for authority to change rates.

Dec. 18 and 19: Hearings on applications of McKrae Telephone Co., Fredonia, for authority to cease operating and of American Telephone Co., Abilene, for authority to operate Altamont, Burlington and Fredonia exchanges.

Jan. 22: Rehearing on application of Waco Telephone Co. for permission to operate in Crawford.

New York Public Service Commission

Nov. 27: Hearing on petition of Walden Telephone Co. for authority to issue $125,000 first mortgage bonds and $20,000 par value preferred stock.

Oklahoma Corporation Commission

Dec. 6, 21, 22: Hearings on application of Southwestern Bell Telephone Co. for authority to increase rates in Oklahoma.

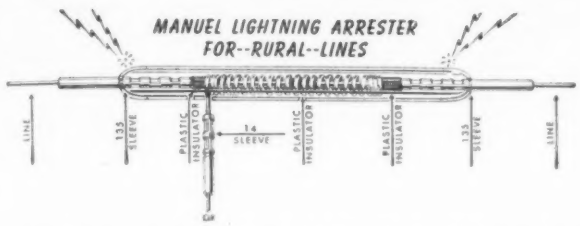
Dec. 6: Continued hearing on application of certain telephone companies for restoration of regulations relating to service installation, similar to Tariff U-2.

Dec. 13: Hearing on application of Murray Hill residents for service from Southwestern States Telephone Co., Brownwood, Tex.

Wisconsin Public Service Commission

Nov. 29: Hearing on application of Peoples Telephone Co., Rio, for authority to increase rates.

Nov. 29: Commission investigation of rates of Commonwealth Telephone Co.,



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2—PUBLIC RELATIONS	5—TELEPHONES—PARTS
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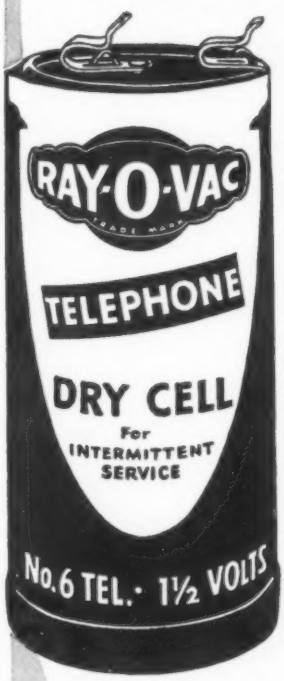
Eastern Sales Office, Room 5130, Empire State Bldg., New York 1, N. Y.

Built to last longer!



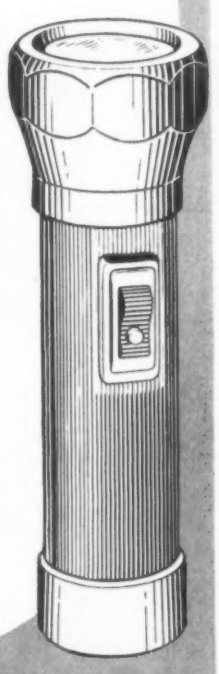
- Fewer replacements
- Lower operating costs
- New package design

Ask for

RAY-O-VAC

TELEPHONE DRY CELLS AND INDUSTRIAL FLASHLIGHTS

- Neoprene Hood (Oil and Chemical resistant)
- Shatter-Proof Plastic Lens
- Sturdy Fiber-Covered Brass Barrel
- Easily Replaceable Switch (saves on repairs)
- Protective End Cap



Over one billion sold

For Flashlight Batteries

. . . depend on RAY-O-VAC LEAK-PROOF Batteries. They give lasting power because they're SEALED IN STEEL . . . *guaranteed* against flashlight damage through corrosion, swelling or sticking!

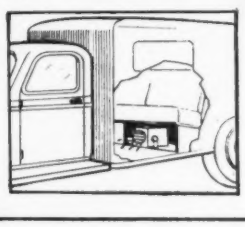
RAY-O-VAC COMPANY, MADISON 10, WIS.
RAY-O-VAC COMPANY, LTD., WINNIPEG, MAN.

Hunter GASOLINE HEATERS

Model UH47 (6 Volt)
$99.50 Net

Safe, Sure, Automatic Heat, Independent of Vehicle Engine

PAYS FOR ITSELF—BY SAVING FUEL AND ENGINE WEAR



• Here's heat as you want it —dependable, economical, thermostatically controlled —from a compact, efficient, easily installed gasoline heater specially designed to meet the needs of the trucking industry.

The Hunter Heater burns any type gasoline, averages less than one pint of fuel per hour. It provides constant circulation of warm air at any temperature desired, is fool proof and trouble free in operation.

Write for complete information, prices on all models.

(Some distributor, dealer territories still open.)

TRANSPORT HEATING & REFRIGERATION
• CAB HEATERS • TRAILER HEATERS
• CARGO HEATERS • CARGO COOLERS

Hunter MANUFACTURING CO.
1550 E. 17th St., Cleveland 14, Ohio

Madison, at its Ferryville and Mt. Sterling exchanges.

Nov. 30: Hearings on applications of Cream Valley Telephone Co., Hawkins, for authority to install automatic switchboards at its Hawkins and Kennan-Catawba exchanges and to increase rates.

V V

L. M. Chicoine Michigan Bell Secretary-Treasurer

The board of directors of the Michigan Bell Telephone Co. has elected Lionel M. Chicoine secretary and treasurer of the company to succeed Jean T. Shaefor, effective with the latter's retirement Nov. 30.

Promoted from assistant secretary and treasurer, Mr. Chicoine has been with the company 44 years in a typical up-from-the ranks career that started when he was only 14 years old.

Mr. Shaefor, who is a widely-known telephone and civic leader, will leave the company under its rule providing for automatic retirement at 65 after a 35-year telephone career.

Gerald G. Watt was promoted to assistant secretary and assistant treasurer and Courtney W. Eidt to assistant treasurer. Both have been with the company 27 years.

V V

Ojers Honored by Rotary For Long Community Service

Roy H. Ojers, retiring area manager of the Lincoln (Neb.) Telephone & Telegraph Co., was the guest of honor at his headquarters town of Nebraska City, at the Nov. 23 meeting of the Rotary club, and was presented with an award for community service. The citation read: "In recognition of conscientious and loyal service in our community over the period of 21 years, and for his many splendid achievements on behalf of the Rotary club."

Mr. Ojers, who had a record of 46 years in the telephone industry in Nebraska, was recently automatically retired under company rules when he reached the age of 65.

V V

October Fire Loss 2.3 Per Cent More Than October, 1949

An estimated $49,953,000 in property was destroyed by fire in the United States during October, an increase of 2.3 per cent over fire losses of $48,914,000 for the same month a year ago, it has been announced.

The October losses represented an increase of 8.8 per cent above September's total of $45,922,000.

The total estimated fire loss for the year ending Oct. 31, 1950, is $686,245,000, an increase of 2.5 per cent over losses of $669,487,000 for the year ending Oct. 31, 1949.

THERE ARE MANY REASONS WHY BUSINESS GROWS BIG

"Why do businesses grow big in America?"

The question is asked and answered in an advertisement published by N. W. Ayer and Son, Inc. The Ayer explanation is:

"Businesses grow big in America for reasons peculiar to America. Everything about this country favors and inspires business growth.

"There are 151 million people in America. The very size of the domestic market encourages growth.

"America has the finest system of transportation and communication in the world.

"The American worker is more productive — machinery makes him so. He turns out more goods at lower cost and earns more money. So he becomes a better customer.

"Americans are ambitious. In America there is no limit to a man's income or possessions.

"Americans expect improvement. So industry in America engages in research to a degree unknown elsewhere. New products are developed, old ones improved.

"America spurs business to competition. This stirs up progress.

"Put a fish in water and it swims. Put a plant in good soil with sun and rain, tend it well and it thrives. Put a sound business, with good management, in America's business soil and climate and it grows big."

V V

Kepler Named Defense Head

R. E. Kepler, general superintendent of the Durham (N. C.) Telephone Co., has been named chairman of the Communications Division of the Durham Civil Defense Council.

V V

"The American people are, of course, for preparedness. They are willing to make sacrifices for that purpose. They are ready to submit to such controls as circumstances may make necessary. But surely they are not unreasonable in expecting the government to participate with them in the program."— Great Falls (Mont.) Leader.

ABC of the Telephone

(Continued from page 27)

pair must be alike. Also, for all practical purposes, the wires should be free of any appreciable defects.

Carrier channels can be added to either or both side circuits of a phantom group. The usual procedure is to add channels equally to each side circuit.

Typical Case 3. Another example of carrier flexibility is presented in *Fig. 3.* In this example there is a physical circuit between exchanges A and B and a second physical circuit between exchanges B and C. The requirement is for a circuit between exchanges A and C. This circuit can be provided by carrier channels as follows:

(1) Place carrier terminal equipment in exchanges A and C.

(2) At exchange B inter-connect the physical circuits to exchanges A and C with a carrier by-pass unit.

(3) Install carrier terminal jacks at exchanges A and C.

In addition to the carrier channel or channels provided between exchanges A and C discussed above, additional carrier channels can be arranged between exchanges A and B and exchanges B and C.

Typical Case 4. Still another type of carrier application is shown in *Fig. 4.* In this example the problem is to provide facilities to serve additional subscribers on a rural line.

Carrier equipment can be installed in a field terminal placed at any con-

"Good morning, Abercrombie Earmuff Company."

Wisconsin Telephone News

"Your suggestion, Mr. Abernathy, that we buy only **KOPPERS POLES** has made you 'the year's most valuable employee'!"

Everybody reaps rewards when Koppers Poles are used!

Line Supervisors get poles that retain their strength, and reduce maintenance work. Deliveries are made when promised, too. The result is easier, more economical line operation.

Purchasing Agents like to deal with Koppers. All transactions are on a businesslike basis. Plus the fact that deliveries are dependable and the quality of the poles is uniform.

Company Officials find that Koppers Poles provide longer periods of *continuous* service, thus increasing revenue and promoting customer good will. And the exceptionally long pole life lowers annual operating costs.

Let us quote on your next requirements. From one of our many treating plants, we can deliver Koppers Full-Length Pressure-Creosoted Poles.

KOPPERS COMPANY, INC. PITTSBURGH 19, PA.

KOPPERS PRESSURE-TREATED WOOD

venient point along the line. A pole location with the equipment mounted in a weatherproof box will prove satisfactory. Also, there is the possibility that a suitable indoor location can be found.

Similar to other examples, wire served telephones are conected through a low pass line filter. The most desirable arrangement is to serve as many stations as possible through the one filter. A separate filter is provided for all stations bridged ahead of the field terminal equipment. As in other portions of this series, the word ahead means toward the central office from a given point. A commercial power supply, usually 110 volts, and a ringing generator must be provided at the field terminal.

Call connections between the carrier and physical circuits must be made in the central office. Thus it can be seen that carrier equipment provides talking channels equivalent to a wire circuit.

[EDITOR'S NOTE: *Subsequent articles in this series will further discuss applications of carrier telephone systems.*]

(To be continued)

V V

Someone has said that a vacation is a period when the average person gives up good dollars for bad quarters.

Plant Training A "Must"

(Continued from page 30)

circuits may readily be set up for instruction and demonstration. Using live equipment is definitely very effective in teaching theory and practice. Battery and ringing current are always available in central offices and should be extended to the class room for use in making the equipment operative.

Central office equipment, station apparatus lines, and cable should be set up as each phase of the plant is studied.

Proper care and use of testing equipment should be stressed during the study periods during which almost every type of meter or instrument will be used to test and demonstrate the performance of the equipment.

For the very small local battery (no cable) plant, an inexpensive multi-purpose meter will suffice for making tests of nearly every part of the switchboard, lines, or sub-station equipment.

The following tests may be made with above mentioned meter. Direct current volts and amperes, ac volts, ohms (resistance), and transmission losses.

Batteries, transmitters, receivers, ringers, generators, switchboard drops and keys, high resistance joints in line wire, etc., may be tested by the use of the multi-meter; therefore, it is also a good instrument for use of a study group in the very small plant.

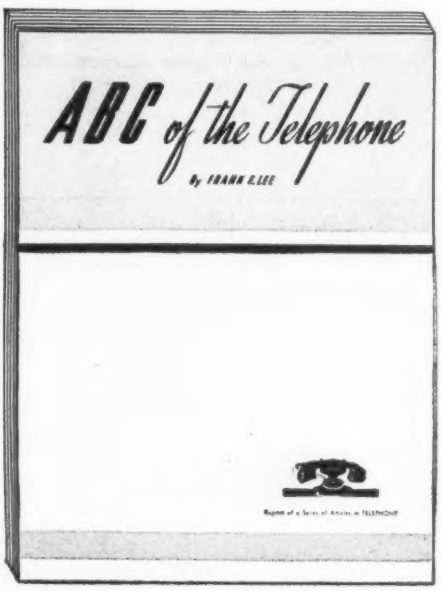
As the size of the plant is increased, so also is the need for more and a wider variety of instruments for regular plant maintenance, therefore, practically all the instruments necessary for teaching a class, should be found in the plant.

Space will not permit the description of all the pieces of testing equipment that could be used to advantage. When instructing a class, however, we should like to call attention to several pieces of apparatus which will be found of real value, in addition to the commonly used meters found in every plant.

(1) An oscillator with a range of 20 to 20,000 cycles, together with an oscilloscope for demonstrating the frequencies that may be transmitted over telephone circuits, also for testing the qualities of individual equipment, such as, repeating coils, etc. The oscilloscope may be used to show ac wave forms, performance of equipment, etc. In fact, its applications are too numerous to mention here.

(2) A Wheatstone bridge or bridge meg is a must for successful teaching

VOLUMES I & II OF "ABC OF THE TELEPHONE" NOW AVAILABLE



Both Written in the Telephone Man's Language

Volume I is an 84-page booklet of 21 installments of the popular series by Frank E. Lee, appearing currently in TELEPHONY. Over 6,000 copies have been mailed domestically and abroad. Includes circuits, transmitters, receivers, induction coils, generators, ringers, relays, line protection, dials, automatic switching, principles of protection, drop wire installations.

Volume II is an 80-page booklet of 20 installments. Covers installation and maintenance of Sub-Station Protectors, Station Wire Installation, Subscriber Installation, Fault Locating, Relay Circuit Analysis, Planned Maintenance Program, Electronic Testing of Aerial Cable and Drop Wire, Plant, Transmission Developments and Loading Coil Theory. Over 2,000 copies of Vol. II have been sold.

Either volume can be bought separately. We suggest, however, that you combine your requirements for both and take advantage of the following lower quantity prices.

Single Copy	$1.50 Each
2 to 25 Copies	1.35 Each
26 to 50 Copies	1.20 Each
More than 50 Copies	1.05 Each

To facilitate handling the large volume of requests for ABC booklets, TELEPHONY has arranged for all orders, remittances and inquiries to be sent directly to Mr. Lee, the Publisher. For your convenience use coupon below.

FRANK E. LEE, Publisher
1751—183rd STREET
HOMEWOOD, ILLINOIS

Please send the following:
_____ Copies of ABC, Vol. I
_____ Copies of ABC, Vol. II

NAME.....
COMPANY.....
STREET.....
CITY.....

of accurate resistance measurement, cable fault location, etc. In the plant where quadded cable is used a capacity unbalance bridge should be found and its use for properly balancing the quads should be taught.

(3) A capacity meter, useful for making all manner of capacity measurements, is essential for demonstrating certain effects of capacity.

(4) Nitrogen gas (or dry air pressure) and testing equipment for testing all lead solder work during cable splicing instructions, should be considered a must.

We have by no means covered all the advantages gained by conducting a study class, neither have we mentioned all the equipment that can be used to great advantage in making the project successful. However, we hope that we have given sufficient information to be of help to companies which are conducting or planning to establish study classes.

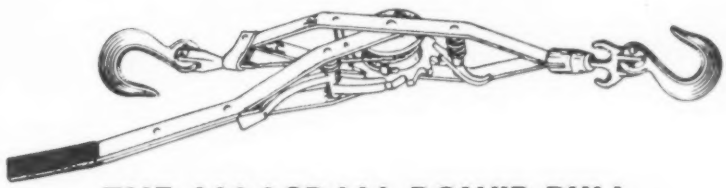
The need for well-trained personnel will continue and it is wise to see to it that we have young men properly trained to take over when advancements are to be made, as the size of the plant increases, when retirements occur, etc.

Trends in Joint Use of Poles

(Continued from page 48)

another corporation organized for the purpose of conducting a business of the same general character as that of such party, or to enter into any merger or consolidation; and, in case of the foreclosing of such mortgage; or in case of such lease, transfer, merger, or consolidation its rights and obligations hereunder shall pass to, and be acquired and assumed by, the purchaser on foreclosure, the transferee, lessee, assignee, merging or consolidating company, as the case may be, and provided further, that subject to all of the terms and conditions of this agreement, either party may permit any coporation conducting a business of the same general character as that of such party, and owned, operated, leased, and controlled by it, associated or affiliated with it in interest, or connecting with it, the use of all or any part of the space reserved hereunder on any pole covered by this agreement for the attachments used by such party, in the conduct of its said business, and for purpose of this agreement, all such attachments maintained on any such pole by the permission as aforesaid of either party hereto shall be considered as the attachments of the party granting such permission, and the rights, obligations, and liabilities of such party under this agreement, in

"THE HANDIEST PULLER I EVER HAD" USER REPORTS



THE MAASDAM POW'R-PULL

IT'S LIGHT—Weighs only six pounds.

IT'S STRONG—Capacity ¾ ton with a 50% tested overload. 14 to 1 power ratio.

IT'S VERSATILE—Wire grips or hooks are easily interchangeable. Flexible stranded cable does not kink, clog or tangle.

IT'S SAFE—Pawl retainer holds ratchet firmly; yet may be released easily to permit slacking off with safety.

Complete with 6' cable $14.75

Sent on Approval

TELEPHONE REPAIR & SUPPLY COMPANY
1760 Lunt Ave. **Chicago 26, Illinois**

BELLS

heard around the world

Single stroke Bells for multiple or series circuits. Vibrating Bells for operation in multiple only. 4" to 20" sizes, indoor and outdoor.

Special tone Signals: musical and soft tone Bells, Chimes, Cow Gongs, Horns and Whistles.

Also contactless vibrating and explosion-proof Bells.

Available on subscriber basis from your local telephone company.

Handled by Leading Distributors
Write for Catalog 5-4.

Wheelock SIGNALS
SIGNAL ENGINEERING & MFG. CO.
154 WEST 14TH ST., NEW YORK 11, N.Y.

ASK ANY OPERATOR...

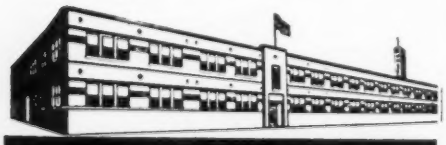
They'll all tell you they prefer RUNZEL NYLON CORDS.

Their reasons will vary from ease of handling to better appearance. RUNZEL NYLON SWITCHBOARD CORDS give better service because the smooth texture of the nylon cord cuts down wear . . . and for the same reason they withstand rugged handling.

Runzel

QUALITY CORDS

You pay no premium when you equip your switchboard with Runzel Cords . . . but you reap dividends through many, many years of fine service. You'll like the features of RUNZEL CORDS . . . we invite your inquiry.



RUNZEL
CORD AND WIRE CO.
4727 WEST MONTROSE AVE.
CHICAGO, ILLINOIS

respect to such attachment, shall be the same as if it were the actual owner thereof.

ARTICLE XIX

Waiver of Terms or Conditions

The failure of either party to enforce or insist upon compliance with any of the terms or conditions of this agreement shall not constitute a general waiver or relinquishment of any such terms or conditions, but the same shall be and remain at all times in full force and effect.

ARTICLE XX

Existing Contracts

All existing agreements whether verbal or written covering the joint use or joint ownership of poles are by mutual consent, hereby abrogated and annulled. In the case of jointly owned poles, an equitable apportionment shall be agreed upon by the parties hereto.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed in duplicate, and their corporate seals to be affixed thereto by their respective officers thereunto duly authorized, in the day and year first above written.

By_____
President

Attest_____
Secretary

(Seal)

By_____
Vice President

Attest_____
Secretary

(Seal)

Early Canadian Companies Rose From Doctors' Business Needs

Strange as it may seem, doctors were instrumental in establishing some of the 540 telephone systems in Ontario, Canada.

Near the turn of the century, when the telephone was becoming popular and medical men had to scurry for business in some of the province's smaller communities, one of the few ethically accepted methods of getting patients was for a doctor to install a telephone system through the territory in which he worked.

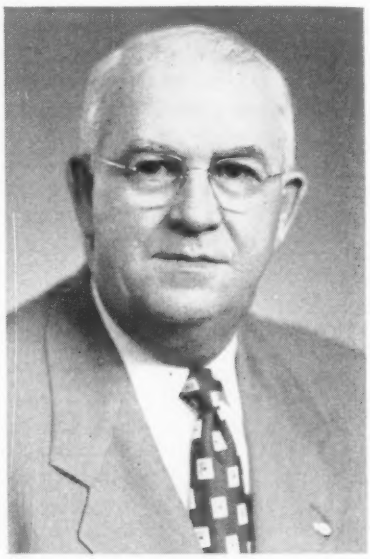
Some of the independent systems still bear the names of the doctors who built them.

At Cannington, for example, the Dr. Henderson Telephone Co. still is doing business with 25 subscribers. Dr. W. J. Henderson started the system in 1902. About the same time another doctor ran out a couple of lines in the community of Derryville. He abandoned the system later, but it still serves 20 subscribers.

Malone, Van Horn, Wilson Named by Indiana Associated

H. E. Hussey, Lafayette, Ind., president of Indiana Associated Telephone Corp., has announced the adoption of a district manager type of organization for his company, effective Nov. 1.

E. L. Malone, W. H. Van Horn and C. G. Wilson, company veterans of



E. L. MALONE

many years of varied telephone experience, have been selected by Mr. Hussey to fit into the three important district manager positions created by the reorganization. Under the new organization the state of Indiana is divided into three large districts.

The Northern District, comprising 26 exchanges with 50,000 stations dis-

W. H. VAN HORN

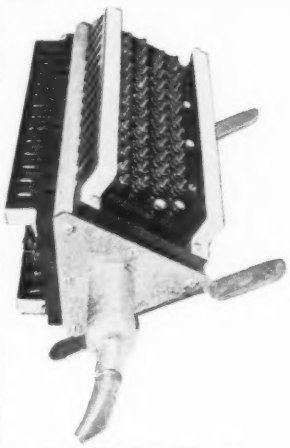
tributed across the northern part of the state, is managed by Mr. Van Horn. His headquarters are in Elkhart.

The headquarters for the Central District are in Logansport, from which

TERMINALS

COOK 51 pr. uniflex TERMINAL

Used inside or out wherever an unprotected terminal is indicated. Mounts either end up in pole or wall box, underground vault, main frame, etc.
Saves space as half of the studs are on each of the two sloping front panels.
SIZE, with bracket attached, 9" wide; 12½" high plus 4¼" nozzle; 7" deep.
Complete with bracket and 10' No. 22 ga. 51 pair cable stub attached.
NEW: Factory packed crates of five terminals. TR 133 $10.00; less than five, $12.50 each.



Cook Uniflex, 51 pair

W.E. B-26 POLE HOUSE

Ideal weatherproof housing for Cook Uniflex or other terminals. Complete with brackets. Size: inside, 15" wide, 22½" high, 9½" deep. Sturdily built of wood, zinc topped, hinged door, painted green. New—Original factory crate $19.50

W.E. B 101, 101 pr. cross-connecting, consists of two 101 pr. terminals with stubs, in wooden pole house, zinc-roofed, for pole or wall mounting. Size 13"x20½"x51½". Note: one 101 pr. terminal equipped with quickly removable fuse panel furnished with fuses. Designed for cross connecting aerial to underground, may be used for terminating or cross connecting up to its cable pair limit ..... $75.00 each

T type, Pyramid on fanning strip base, phenolic separators, 70 lugs x 6 high $5.00

RELAYS — RACKS

WESTERN ELECTRIC R-603 RELAYS (1 make, 1650 ohm)

700 W.E. No. R-603 relays, mounted 20 per strip, with dust covers, on 23" floor mounting angle iron rack. Operates .0074 amp.—nonoperate .0027 amp. Not wired. BRAND NEW. Factory perfect, original factory crate.
Worth several times this Price: F.O.B. Los Angeles $950.00
Individually $2.00 each—Strip of 20 with cover $40.00

WESTERN ELECTRIC B-1 SPECIAL RELAYS

One make, 10 ohm, individual dust cover, micrometer adj. screw, mounted ten per strip to fit 19" rack. Price: per strip of ten, with covers $10.00
Note: Condition New as removed from new equipment.

WESTERN ELECTRIC J-54 RELAYS

Lamp supervision on LB line. Double wound, pulls up on AC (mag.) voltage, holds on DC (battery) voltage. Individual dust covers. AC coil 3120 ohms, DC coil 420 ohms. 3 circuit "makes" to allow interlocking and lamp operation. As removed from new W.E. equipment.
Price $3.00
7 J-54 relays and 7 2-mf condensers mounted on strip to fit 19" rack $20.50

REPEATING COILS

Kick or other Ring-thru use, C-111, mfg. by Kellogg, 4 section, 57 ohms each $2.50
Non-ring-thru, W.E. No. 94E, 4 section, 20 ohms each 1 to 1 ratio $1.00
Mounting strips to mount ten No. C-111 or No. 94E coils $2.00

INSULATORS

Brown Glazed Ceramic 80 or 100 per box. 2 groove, screw type 2-5/16" high x 1½" diam. 3" screw-flattened shank for wrench turning.
INSULATOR 56 ..... 5c
Weight 70 lbs. per C.
Pony No. 9 Brown ceramic, glazed. Standard package, 100 per box. Moistureproof, partitioned case.
INSULATOR 25 ..... 1½c
Weight 70 lbs. per C.

Samples, photos or more complete description on application. Shipped on open account subject to your approval. All prices F.O.B. Los Angeles. Quantities limited to stock on hand.

THE Telectric CO.

1218 VENICE BOULEVARD LOS ANGELES 6, CALIF.
Richmond 2249

TELEPHONES

KELLOGG 4901A weatherproof cast-iron case, CB, enclosed 1000 ohm ringer, long receiver, blank for dial $17.50
As above, but slightly used or shopworn $12.50

KELLOGG 5812-M LB, wall type with handset, 5 bar generator 1600 ohm ringer, compact oak box painted with olive green primer $17.50

AE Mine type AM 29 CB, castiron case with externally mounted 1000 ohm ringer, blank for dial, long receiver $24.50

A-1 operating condition. Recently removed from discontinued military establishment. NOT RETIRED from old age. KELLOGG No. 9917 CB wall handset type, SL ringer $8.50
Equipped with A.E. Met Dial $10.75

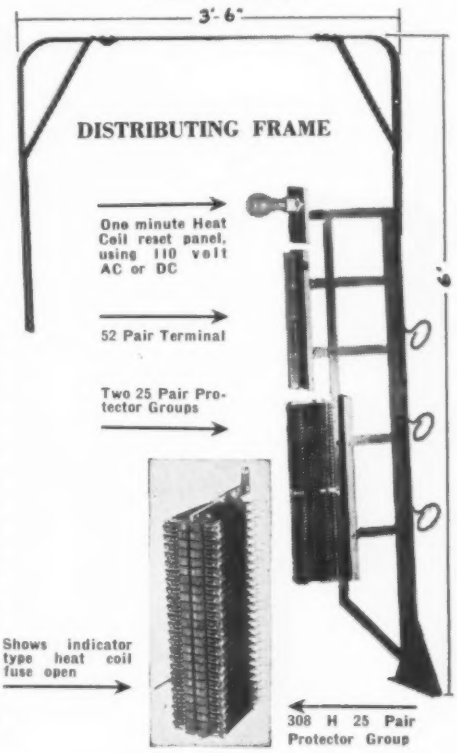
MAIN FRAMES

Reliable Electric

with complete 3-way Protection —50 pr. $39.50

Complete with Protector Groups, Terminals, Etc.

Frame is of light weight bolted construction which can easily be adapted to your available space. Consists of frame, distributing rings, 2 26 pair terminals (numbered 1-52) 2 25 pair No. 308-H Protector groups equipped with No. 115-H combination heat coil fuses (indicator type) and carbon discharge blocks with spares and fuse re-set panel. Shipping weight 77 lbs. New—in original factory box FR39 $39.50


3'-6"
DISTRIBUTING FRAME
One minute Heat Coil reset panel, using 110 volt AC or DC
52 Pair Terminal
Two 25 Pair Protector Groups
Shows indicator type heat coil fuse open
308 H 25 Pair Protector Group

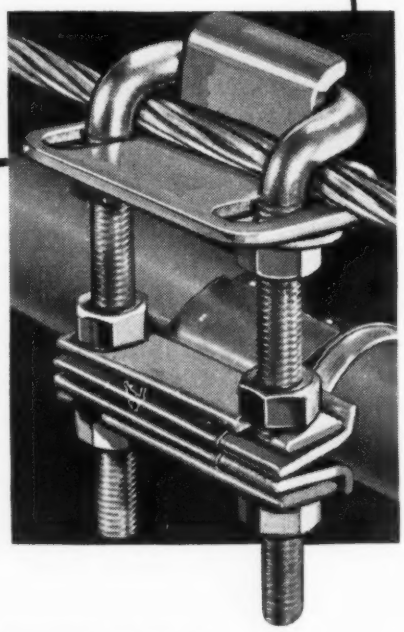
(1 only) Cook No. 3800, 600 pair section complete with fanning strips, distributing rings, terminal blocks and six 101 pair groups of Cook No. 3800 protectors equipped with carbon discharge blocks, dielectrics and self soldering heat coils.
SIZE: 22½" wide, 88" high—3 vertical protector mounts, 202 pr. each.
While this frame and protectors have had some service they look like they just arrived from the factory and are ready for immediate installation. Protector groups and frame are crated separately.
Price: (less than ½ of original cost) F.O.B. Los Angeles $600.00

(1 only) Western Electric floor mounting frame, 1200 pair capacity, complete with fanning strips, distributing rings, terminal blocks and 23 W.E. No. 50C 50 pair protector groups (1269 A type) equipped with 76A heat coils, No. 28 and 29 dischargers. Arranged in six vertical sections with 200 pairs per mount.
SIZE: 44" wide, 7' high.
Condition: slightly used but in A-1 shape throughout and ready for service. Protector groups and frame are crated separately.
Price: as described, F.O.B. Los Angeles $1,000.00

(1 only) Western Electric floor mounting frame, 2 vertical sections each mounting 8, 20 pair No. 1269A protector groups, total capacity, 320 pair. Complete with fanning strips, distributing rings, terminal blocks and 16 No. 1269A, 20 pair protector groups equipped with 76A heat coils, No. 26 and 27 dischargers.
SIZE: 8' high, app. 18" wide.
Price: F.O.B. Los Angeles $300.00

W.E. 1420B ladder type 6'⅜" high x 1'5$\frac{3}{4}$" wide, mounts Ten-1435U or W protector groups. NEW $15.00
W.E. 1430B (2 only) $20.00

"Cable Slippage Ended-
When We Installed
KEARNEY
GRADE CLAMPS"



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C. G. WILSON

point Mr. Malone manages 26 exchanges serving approximately 45,000 stations spread through the middle portion of the state.

The Southern District covers 16 of the company's exchanges serving 11,000 stations in the southeastern part of the state. Mr. Wilson manages the Southern District from his headquarters in Connersville.

In announcing the appointments of the new district manager posts, Mr. Hussey stated that the reason for the change from a functional to a district manager type of organization is to effect an immediate coordination of departmental functions at the exchange level.

V V

H. V. Bozell Subject of N. Y. Newspaper Feature

Harold V. Bozell, president of General Telephone Corp., New York City, was the subject of a daily column on business and finance leaders in a recent edition of the New York *Herald-Tribune.*

Under his leadership, the corporation has expanded to more than 1,000,000 installations.

V V

>> Steel casing has been provided for the telephone cables between New Delhi, India, and Gurgban in the Punjab area after repeated service interruptions were traced to the activities of field mice.

V V

"Some of our own citizens are communists at heart, working within the framework of our constitutional rights to destroy our republican form of government."—Placer (Calif.) Herald.

Naylor Named Vice President Of Philippine Company

H. P. Mahoney, vice president and general manager of the Philippine

J. T. NAYLOR

Long Distance Telephone Co., Manila, P. I., announced on Nov. 9 the election of J. T. Naylor as a vice president of the company.

Mr. Naylor, formerly vice president and general manager of the Sunland-Tujunga Telephone Co., Tujunga, Calif., will be associated with Mr. Mahoney in the operational aspects of the company's affairs. He will arrive in Manila about Dec. 15 to assume his new duties.

V V

British Publish Book on German Communications

The British Intelligence Objectives Sub-Committee has released a booklet entitled "Telecommunications and Equipment in Germany During the Period 1939-1945." The booklet was prepared by the British General Post Office.

The volume covers various aspects of the communications industry in Germany, including research, transmission, instrument design and testing equipment. Copies are available from the British Information Services, 30 Rockefeller Plaza, New York 20, N. Y., at a price of 40 cents each.

V V

» Noted scientist Robert A. Millikan once engaged a maid whose scientific knowledge left much to be desired. One day, when Millikan was in his study, he heard the girl answer the telephone.

"Yes, this is the Millikan residence," she said. "You want to speak to Dr. Millikan? Are you sure? He isn't the kind of doctor who does anyone any good, you know."

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PORCELAIN PRODUCTS, INC.
FINDLAY, OHIO

Adequate Records Vital

(Continued from page 52)

fundamental policies laid down in the early years. While there have been great technical changes in the telephone business, there has been little change in the manner of the public, of public regulation, etc., Mr. Blomeyer stated.

He illustrated his address with excerpts from the series of "Letters to Managers," written by his father, E. C.

H. M. STEWART

Blomeyer, Chicago, well-known telephone executive, 30 years ago, by drawing parallels between policies in effect then and today.

Speaking on the subject, "Let's Look at the Score," G. L. Kinsman, Georgia connecting company representative of the Southern Bell Telephone & Telegraph Co., gave a detailed record of accomplishment of Georgia telephone companies—Bell and Independent. He stated:

"Most of us have made a great deal of progress in our businesses since World War II. Our customers have forced us to meet demands for more service. Station gains have been tremendous, averaging almost 100 per cent. This has necessitated increases in central offices and outside plant facilities over and over again. Along with that demand, increased costs have forced higher pricing of our products.

"In Georgia in 1946, Southern Bell out of 125 exchanges had 30 magneto exchanges. Along with meeting increasing demands for more service, Southern Bell has been able, including next year's program, to reduce the number of magneto exchanges by dial conversions to eight and at the same

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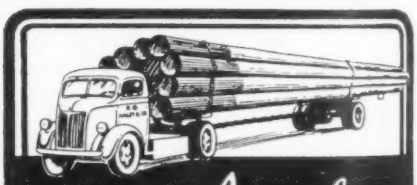

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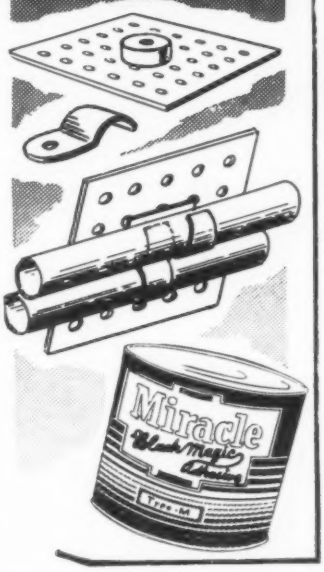

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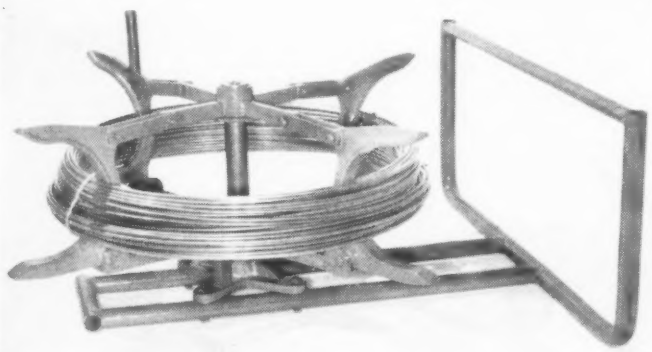

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to the Telephone Industry. A strong collapsible reel with a brake (to prevent running ahead) to be used for line construction, wire pickup and payout and can be used without stand on service truck by bolting to body. Write for information.

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By Neal

Distributed by Kellogg Switchboard & Supply Co.

NEAL COMPANY, 318 N. 18th St., Omaha, Neb.

double your spans on new jobs ...make old ones safer with Amertel-135

Be sure you have all the facts on Amertel-135 before you select telephone wire for new or existing installations.

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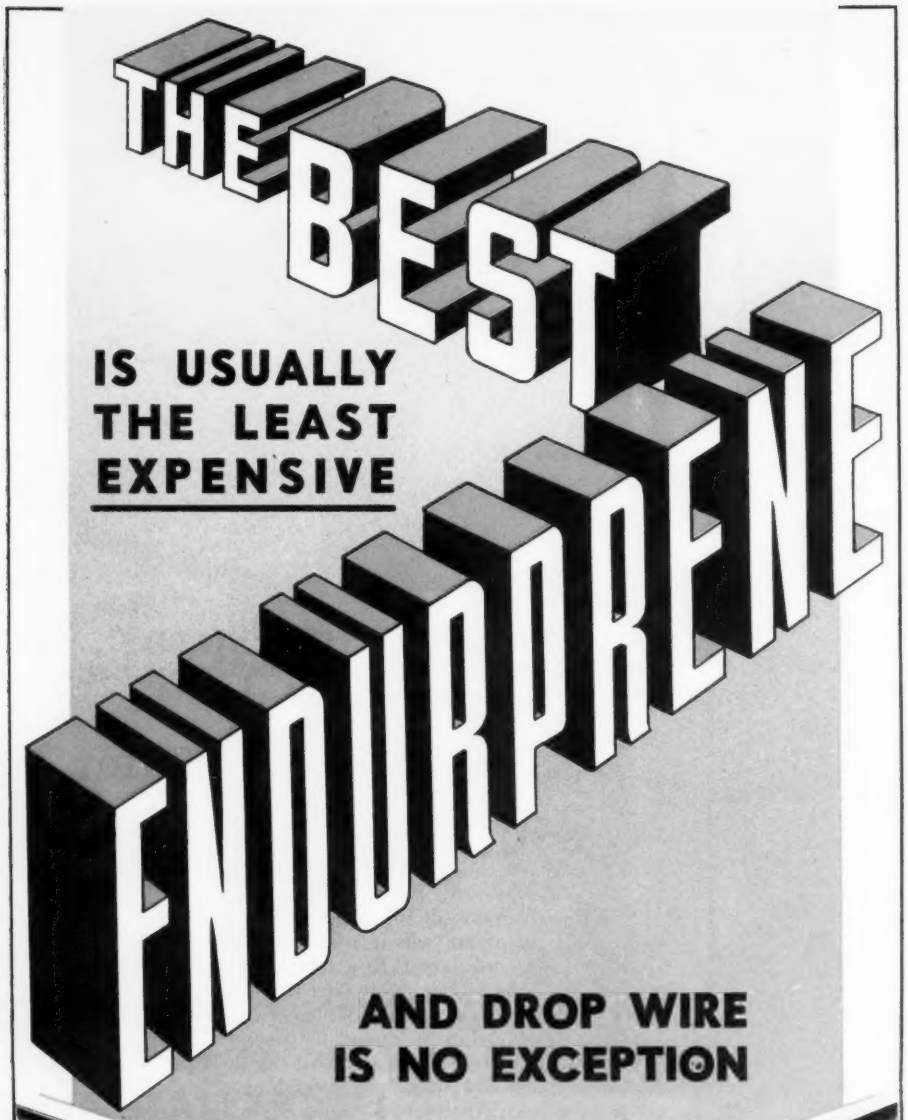
TELEPHONE & TELEGRAPH WIRE
UNITED STATES STEEL



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time to change the service of eight common battery exchanges to dial so that today we have 73 per cent of our stations dial, 26 per cent common battery, and 1 per cent magneto, and next year the percentages will be 81 per cent dial, 18 per cent common battery and a fraction of 1 per cent magneto.

"The Independent segment of the industry in Georgia has, of course, made similar progress. In 1946, you had 39,000 stations and now have 58,000. In 1946, you had 33 common battery exchanges, 119 magneto exchanges, 22 dial exchanges, and today you operate 181 exchanges with 58,000 stations. Fifty-two dial exchanges have 14,000 stations, 37 common battery exchanges have 30,000 stations, and 92 magneto exchanges have 14,000 stations. So that 24 per cent are dial, 52 per cent are common battery and 24 per cent are magneto.

"After the present programs are carried out during the next few months, there will be 69 dial exchanges serving 21,000 stations, 35 common battery exchanges with 26,000 stations, and 78 magneto exchanges with 11,000 stations and the percentages of stations will be —dial, 37 per cent, common battery, 45 per cent, and magneto, 18 per cent.

"Of course, the field for the greatest further progress lies among the 78 magneto exchanges. These 78 magneto exchanges average 130 stations each and fall in these sized groups: 40 have less than 100 stations each; 23 have between 100 and 200 stations each; 15 have 200 or more stations."

He listed several exchanges of the Bell company where substantial increases in stations and toll revenue had resulted from a conversion from magneto to common battery or dial service.

The policies and telephone loan program of the Rural Electrification Administration were explained by D. B. Corman, Washington, D. C., REA telephone consultant.

Directors re-elected by the convention are W. C. Martin, Fitzgerald; J. L. Matthews, Statesboro; J. A. Peters, Manchester; A. N. New, Thomaston; A. A. Fincher, Jr., Canton; J. E. Kirk, Dalton; H. W. Vaughan, Chickamauga, and Lane Hubbard, Atlanta.

Officers elected by the directors are: President, E. P. Burney, Lafayette; first vice president, J. H. Wright, Monroe; second vice-president, E. B. Emrey, Decatur, and secretary-treasurer, H. M. Stewart, Cornelia.

V V

>> It's going up fast—a housing project for magpies, and it's all free.

The ready made houses are going up on the telephone poles running through Victoria, Australia. The telephone company providing the nests is doing so in the hope that the magpies will move in fast and not bother about building their own homes. This is because the birds usually build on the wires, causing noisy connections and other line trouble.

NARUC Raps Excess Profits Tax

(Continued from page 21)

than the average of 1946-49 are required because of the large increase in capitalization in each of the years 1947-47-48-49 and the lag of such capitalization becoming fully productive. As said, further large capital investments are required. In our judgment the calendar year 1950 constitutes the most representative and equitable year. It has as yet been little affected by war business, particularly so for public utilities. The "pre-Korean" period in any event is no earlier than the year ending June 30, 1950. We would therefore recommend 1950 as *the* base year. Even the use of the year 1950 must provide for specific relief in those cases where earnings were subnormal.

For both the invested capital and the average earnings approach, normal and surtaxes should be deducted before determining "excess war profits"; and the percentage returns on capital should be taken to mean "after all taxes including income and excess profits taxes." The percentage return should be related to the approximate cost of acquiring large amounts of new capital. Variance in the rate of return arises from the differences in the rate base adopted by a commission, as well as for the character of the utility for which the rate is fixed. In some states there is of necessity a variance in required rate of return because of legal provisions with respect to rate base.

These suggestions would apply the same definitions to both regulated and unregulated forms of business.

(b) Congress might prefer, however, to avoid the difficulties of drafting definitions applying to both regulated and unregulated businesses, and could do so by including in the proposed law a provision designed specifically to cover the utilities. In such event, we urge that the law provide that the excess profits tax not impinge upon the level of utility earnings prevailing in the year 1950, which is the period immediately prior to the time at which war or defense activity began to affect business returns. Further, the law should give adequate recognition to the normal regulated earnings necessary to support the large amounts of additional capital the utilities will have to attract and use in expanding their properties to take care of the public demands for

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their services and for defense production in the years ahead.

These suggestions have varying merits and shortcomings, and at best they bridge only imperfectly the differences between tax formulas and the formulas of commission regulation. We therefore incline to the conviction that an excess profits tax is by its nature not fitted to the facts of the public utility situation.

In the Nation's Capital

(Continued from page 18)

NARUC Excess Profits Tax Case to Congress

The NARUC's case against an excess profits tax on utilities was presented to Congress this past week by Commissioner John H. Hessey, of the Maryland Public Service Commission. Hessey's statement before the House Ways and Means Committee consisted of the NARUC special subcommittee report on Excess Profits Tax (discussed in these columns last week). Hessey's remarks urging that an excess profits tax is, by its nature, not fitted for application to regulated public utilities, were backed up by an NARUC convention vote at Phoenix "adopting" the committee report instead of the routine and customary "acceptance" of all committee reports.

(See page 19 for text of statement of NARUC committee on excess profits tax before House Ways and Means Committee.)

The NARUC convention elected a new slate of officers: George H. Flagg, of Oregon, was elected president for the coming year; J. C. Darby, of South Carolina, first vice president; Eugene S. Loughlin, of Connecticut, second vice president. The new solicitor general is John P. Randolph, of Missouri, succeeding Walter R. McDonald. Austin L. Roberts, Jr., of Washington, D. C., will continue as secretary-treasurer.

Wickard Discusses Loans for North Dakota

One of the frankest discussions of the progress of the REA rural telephone problem was given on Nov. 17 by REA Administrator Claude R. Wickard at Bismarck, N. D. He was addressing the annual convention of the North Dakota Farmers Union. He recalled that the Rural Telephone Loan Act was slightly more than one year old, and that Congress had enacted it because "only about 40 per cent of the

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End objectionable noise interference due to transient and induced voltages, and provide additional lightning protection in bell circuits, with the Vincent Rare Gas Relay. Compact, non-mechanical, the Vincent Rare Gas Relay is easily inserted in the bell box, or at the ground connection or protector block on compact handsets, in series with each bell. It needs no further maintenance.

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nation's farms had telephone service and at least half of these had inadequate and unreliable service." Only about 35 per cent of North Dakota farms were getting telephone service.

Since that time, Wickard reminded his listeners that REA has received about 700 applications from all over the country, including 18 from North Dakota. One of these 45 loans actually approved came from that state. Wickard described the service standards of the REA rural telephone program as follows:

"Speaking of our program nationally, one of our borrowers has already converted from an old manual system to a new modern dial system. I should like to tell you just a little about what has taken place on this system, which is at Chancellor, Va., because it is an example of what you can have all over North Dakota. This new dial system gives them prompt service 24 hours a day. No more than eight people are on a rural line. Each call is automatically limited to seven minutes. The difficulty of code ringing is greatly reduced, due to the fact that only half of the rings on the line are heard by each subscriber. The lines have been rebuilt and right-of-ways have been cleared to alleviate the outage problem and to provide service so that conversations can be heard easily and distinctly. Furthermore, the service will be just as good in 10, 20 or 30 years as it is now because funds are provided for the proper maintenance of the system.

"I think perhaps you will be interested in the monthly cost of $3.00 for the rural subscribers on a party line. Now, I know that may seem a little higher than many of you have been paying but I think if you will evaluate the service properly, you will probably find it much cheaper than you have been paying. If, because of unsatisfactory and unreliable service, you have to make trips with your automobile, involving many miles of travel, I believe that your time and expense will total several times your monthly charge. To put it in another way, your present communication cost is a lot more than the dollar or two you may be paying for your present service."

The Chancellor subscribers, he estimated, are paying only about "one cent per call." He added that costs might have to be higher in North Dakota because of the low density of population. But he doubted if the North Dakota farms could get as much value from any other purchase or outlay.

Administrator Wickard did have something pertinent to say about the formation of rural telephone cooperatives. Reflecting the established REA policy to look first to existing telephone service, he suggested that special telephone co-ops might be formed later, if existing telephone companies were not ready, willing or able to extend the needed rural service. His exact comment on this important point follows:

no question
about this tension—
It'll be exactly right, come high winds . . . heat or cold . . . Because it's being checked with a Dillon Dynamometer . . . Checked to maintain *correct* tension for stability and support in guy wires—for adherence to the tension recommended by the manufacturer. Accurate guying this easy way *really* pays off.
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The Dillon Dynamometer is easy to use, portable, light weight. Precise, sensitive, yet extremely rugged — the Dillon Dynamometer can not be injured by overload — shackles are drop-forged to a strength of double the capacity. Can be worked with a rope block, chain hoist or truck winch. WRITE TODAY FOR YOUR FREE COPY OF BULLETIN AND "RULES FOR SUCCESSFUL WIRE PRE-STRETCHING AND STRINGING."

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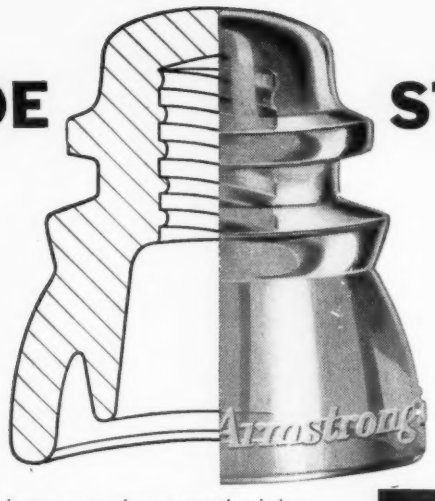
INSIDE STORY



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Line experience and factory tests, however, have proved that these heavy-duty insulators can successfully withstand loads that bend standard metal pins. In addition, they will resist thermal shocks far greater than any met on the line.

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Proven in the field.
Rigid inspection standards insure
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"Now just as in the case of the rural electrification program, you are not going to get the benefits of this new telephone program without local people taking the initiative and the responsibility for borrowing the funds, constructing facilities and operating them successfully.

"There are many difficulties involved in the telephone program which are not involved in the rural electrification program. The first matter is that there is some existing telephone facility in almost every rural area. The new subscribers will want to talk to these people and of course those people will want to talk to the new subscribers, therefore, there must be some arrangement made for a community type of communication.

"One of the things that must be done if we are to have economical service is that there must be a consolidation or grouping of some of the present facilities. I know that people sometimes object to consolidation because it sounds to them like some one may be squeezed out of the field. The fact of the matter is, however, that the very small telephone company is going to find it extremely difficult to exist because it cannot give satisfactory service at low cost. The overhead expenses for proper management, keeping books, and maintenance of lines are too large in the case of tiny companies. There is also the problem of intercommunication between communities which is more difficult in the case of small companies. We feel that at least several hundred subscribers is the minimum necessary to assure adequate service."

He went on to explain that there is "more financial risk involved in the telephone business than in the rural electrification business." He concluded:

"The opportunities for increasing returns are more limited because the use is limited. We are requiring a certain amount of equity to be furnished by the people who are to install the facilities. In the case of a mutual or cooperative, this equity merely means making an advance payment by the subscribers. For instance, if $40 is required for equity of each subscriber, that means that that $40 will be used in construction of the facilities rather than borrowing that much money from the government which would have to be repaid later with interest. I think that this equity requirement should not cause much trouble here in North Dakota, especially in these times of prosperity.

"We have a small telephone staff to help in the development and operation of rural telephone systems. This staff has to spread itself pretty thin to carry out its most essential activities. The initial planning and surveys must be done by local people. If you wish to take advantage of the program a good way to get started is to appoint a committee to call on the existing companies to see if they are interested. If they are not, you can organize a cooperative. We will furnish you some suggestions for doing that. Your farm leaders and REA officials will help you make surveys and draw up some plans. Prepare an application if you think you have a good plan. We will send some one

to visit you after you have done all you can to get started."

Wickard did not touch on the copper supply problem of the National Production Authority (NPA) which was discussed at length at a recent meeting in NPA Administrator Harrison's office of government and communication industry executives. The REA sources have admitted that a strict copper cutback affecting all telephone expansion plans might very well mean a severe setback for the entire REA rural telephone program. It is understood that Wickard and his associates have hopes of attaching a "defense significance" to the program to avoid any full scale cutback. To this end, the support of any number of REA-minded Senators and Congressmen might easily be used to assure at least some continuance of the telephone program.

V V

Artisan Announces Overhead Ladder Racks for Trucks

A complete set of overhead ladder racks for installing on standard pick-up truck bodies, has been announced by Artisan Products, Inc.

Of heavy tubular construction, the ladder rack assembly consists of tubu-

lar bows, spring hold-downs, ladder rack guides, and the necessary bolts and clamps for installing. Also available for attaching to ladder racks are tree trimmer brackets.

For descriptive literature write "O-R" Artisan Products, Inc., 3490 W. 140th St., Cleveland 11, Ohio.

The company also has issued a new catalog featuring its line of Craftsman service truck bodies, trailers and truck side compartments for distribution to the telephone field.

V V

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NEOPRENE Jacketed Drop Wire for the toughest assignments and highest performance standards, with adhesion capable of withstanding great stress. Premium grade materials and extra care in manufacturing and testing assure the user of drop wire which is highly resistant to compression and abrasion. Write us today for samples, prices and technical data.

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A complete line of Insulated Telephone Wire—outside or inside.

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MAGNETO TELEPHONES 5-bar, 1600 ohm, all makes. Wall, Desk, Handsets, Battery Boxes, Holtzer-Cabot Ringer. W. E. Test Cabinet. Big Bend Telephone Co., Big Bend, Wis.

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SWITCHBOARD — Kellogg-2 positions equipped with 400 universal lines, 40 rural and toll lines, 30 universal two-party machine ringing cord circuits—available January, 1951. Write or telephone, Telephone Company, Ironton, Mo.

HIGHWAY DIGGER ON FORD TRUCK; Coleman drive; locking differentials; air compressor; tools. FORD LINE TRUCK; highway body; winch; derrick; locking differential; tools. HIGHWAY TRAILER, air brakes. Write Mrs. Arthur Holmes, 513 Ridge Ave., East Aurora, N. Y.

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21 Cell Storage Batt.; 2 Interrupters; 1 Power Panel; 1 25A M.G. Set.

THE KITTANNING
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Kittanning, Pa.

FOR SALE

W.E. 98A Station Protectors.....$1.15 Ea.
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Rubber Tape — cellophane wrapped, very good, ¾x15, made by U. S. Tire & Rubber Co.....11c Ea. or $10.00 per 100
Eight inch Utica lineman's pliers—New..$2.30
W.E. Operator's Head & Chest Set—Complete with cord & plug. Complete new Hal Rec Unit 396A Transmitter...$7.95 Ea.
W.E. No. 684 C Subscribers Set without Ringers — New.....$2.50
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Cords made by Runzell—3 cord. Red, Yellow, Green Tie Cords both ends, spade lugs both ends. 6 ft. long. New; very good condition 32c
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